#6   PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Malouf et al.   Examiner: Not Assigned

Application No.: 10/029,413   Group Art Unit: Not Assigned

Filed: December 20, 2001   Docket No.: 421/29/2

Confirmation No.: 3695

For: PURIFIED AND ISOLATED PLATELET CALCIUM CHANNEL NUCLEIC ACIDS AND POLYPEPTIDES AND THERAPEUTIC AND SCREENING METHODS USING SAME

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Respectfully submitted,

JENKINS & WILSON, P.A.

Date: 03/18/2002   By: *Arles A. Taylor*

Arles A. Taylor, Jr.
Registration No. 39,395

Suite 1400 University Tower
3100 Tower Boulevard
Durham, North Carolina 27707
Telephone: (919) 493-8000
Facsimile: (919) 419-0383

Customer No. Bar Code Label: |||||||||||||||||||||||

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SEQUENCE LISTING

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       Nichols, Timothy C.

<120>  Purified and Isolated Platelet Calcium Channel Nucleic Acids and
       Polypeptides and Therapeutic and Screening Methods Using Same

<130>  421/29

<160>  29

<170>  PatentIn version 3.1

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Cys Leu Thr Leu Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val
        35                  40                  45

gaa tgg aag ccc ttc gag acg atc atc ttg ctc acc atc ttt gcc aat     192
Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn
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Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn
65                  70                  75                  80

tct ctg aac ctc ggc ctg gag aag ctg gag tat ttc ttc ctc att gtc     288
Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val
                85                  90                  95

ttc tcg att gaa gcc gcc atg aag atc att gcc tac ggc ttc tta ttc     336
Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe
            100                 105                 110

cac cag gac gct tac ctg cgc agt ggc tgg aat gtg ctg gac ttc acc     384
His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr
        115                 120                 125

att gtc ttc ctg ggg gtc ttc acc gtg att ctg gaa cag gtt aac gtc     432
Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val
    130                 135                 140

atc caa agc cac aca gcc cca atg agc agc aaa gga gcc ggc ttg gat     480
Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp
145                 150                 155                 160

gtc aag gcc ctc aga gcc ttc cga gtg ctc aga ccc ctc cgg ctg gtg     528
Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
                165                 170                 175

tcg ggg gtg cct agc ctg cag gtg gtc ctg aac tcc atc ttc aag gcc     576
Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala
            180                 185                 190

atg ctc ccc ctc ttt cac atc gcc ctg ctg gtc ctc ttt atg gtc atc     624
Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile
            195                 200                 205
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atc tat gcc atc atc ggg ctg gag ctc ttc aag ggc aag atg cac aag    672
Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys
210                     215                     220

acc tgc tac ttc att ggt aca gat atc gtg gcc acg gtg gag aat gaa    720
Thr Cys Tyr Phe Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu
225                     230                     235                 240

gag cca tcg ccc tgc gcc agg acg ggc tca ggg cgc cgg tgc acc atc    768
Glu Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile
                        245                     250                 255

aat ggc agt gag tgc cgg ggc ggc tgc cca ggg ccc aac cat ggc atc    816
Asn Gly Ser Glu Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile
                260                     265                     270

acc cac ttc gac aac ttc ggc ttc tcc atg ctc acc gtg tac cag tgc    864
Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys
            275                     280                     285

att acc atg gag gga tgg act gac gtc ctt tac tgg gtc aat gat gcc    912
Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala
            290                     295                     300

atc ggg aat gag tgg ccc tgg atc tat ttt gtc acc ctc att ttg ctg    960
Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu
305                     310                     315                 320

gga tcc ttc ttc atc ctc aac ctg gtg ctg ggt gtc ctg agt ggg gaa   1008
Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu
                325                     330                     335

ttc acc aag gag cgg gag aag gcc aag tcc agg gga acc ttc cag aag   1056
Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys
                340                     345                     350

ctc cgg gag aag cag caa cta gat gag gac ctt cgg ggc tac atg agc   1104
Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser
            355                     360                     365

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Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly
        370                     375                     380

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Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu
385                     390                     395                 400

att gca ggc ttg aac aaa atc atc cag ttc atc cga cat tgg agg cag   1248
Ile Ala Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln
                    405                     410                     415

tgg aac cgc atc ttt cgc tgg aag tgc cat gac atc gtg aag tcc aag   1296
Trp Asn Arg Ile Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys
                420                     425                     430

gtc ttc tat tgg ctg gtg att ctc atc gtt gcc ctc aac acc ctg tct   1344
Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser
            435                     440                     445

atc gcc tca gag cac cac aac cag ccg cac tgg ctg acc cgt ttg caa   1392
Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln
        450                     455                     460

gac att gcc aac cgg gtg ctg ctg tcc ctc ttc acc act gag atg ctg   1440
Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu
465                     470                     475                 480

atg aag atg tac ggg ctg ggc ctg cgc cag tac ttc atg tct atc ttc   1488
Met Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe
                485                     490                     495

aac cgc ttc gac tgc ttc gtg gtg tgc agc ggt atc ctg gag atc ctg   1536
Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu
            500                     505                     510
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2

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ctg gtg gag tcg ggc gcc atg aca ccc ctg ggc atc tcc gtg ctc cgc    1584
Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg
        515             520                 525

tgc atc cgc ctc ctg agg atc ttc aag atc acc aaa tat tgg acg tcg    1632
Cys Ile Arg Leu Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser
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ctg agc aac ctg gtg gca tcc ctg ctc aac tcc atc cgc tcc atc gcc    1680
Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala
545             550                 555                 560

tcc ctg ctg ctg ctg ctc ttc ctc ttc atc gtc atc ttc cgc ctc ctg    1728
Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu
                565                 570                 575

ggc atg cag ctc ttt ggg ggg agg tat gac ttt gaa gac aca gaa gta    1776
Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val
            580                 585                 590

cgg cgc agc aac ttt gac aac ttt ccc caa gcc ctc atc agc gtc ttc    1824
Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe
        595                 600                 605

cag gta ctg aca ggg gaa gac tgg acc tca atg atg tac aat ggg atc    1872
Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile
        610                 615                 620

atg gcc tcg agc ggg ccg tcc tac cct ggc atg ctt gtg tgc att tac    1920
Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr
625                 630                 635                 640

ttc atc atc ctt ttc gtc tgt ggc aac tac atc ctg ctc aat gtc ttc    1968
Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe
                645                 650                 655

ctg gcc att gcc gtg gac aac ctg gcc gag gcg gag agc ctg act tct    2016
Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser
            660                 665                 670

gcc cag aag gcc aag gct gag gag aaa aaa cgc agg aag atg tcc aag    2064
Ala Gln Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys
        675                 680                 685

ggt ctc cca gac aag tca gaa gag gag aag tca acg atg gcc aag aag    2112
Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys
        690                 695                 700

ctg gag cag aaa ccc aag ggt gag ggc atc ccc acc act gcc aag ctg    2160
Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu
705                 710                 715                 720

aaa atc gat gag ttt gaa tct aat gtc aat gag gtg aag gat ccc tac    2208
Lys Ile Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr
                725                 730                 735

ccc tca gcc gac ttc cca ggg gat gac gag gaa gat gag cct gag atc    2256
Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile
            740                 745                 750

ccg ctg agc ccc cga cca cgt ccc ctg gct gag ctg cag ctg aaa gag    2304
Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu
            755                 760                 765

aag gcc gtg ccc att cca gaa gcc agc tcc ttc ttc atc ttc agc ccc    2352
Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro
        770                 775                 780

acc aat aag atc cgt gtc ctg tgt cac cgc atc gtc aat gcc acc tgg    2400
Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp
785                 790                 795                 800

ttc acc aac ttc atc ctg ctc ttc atc ctg ctc agc agc gct gca ctg    2448
Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu
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3

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gct gcg gaa gac ccc atc cgg gct gat tcc atg aga aat cag atc ctt    2496
Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu
            820           825               830

aaa cac ttt gac atc ggg ttc acc tct gtc ttc act gtg gag att gtc    2544
Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val
            835               840               845

ctc aag atg acg acc tac gga gcc ttc ctg cac aag ggt tcc ttc tgc    2592
Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys
            850               855               860

cgc aat tac ttc aac atg ctg gac ctg ctg gtg gtg gcc gtg tcc ctc    2640
Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu
865               870               875               880

atc tcc atg gga ctt gag tcc agt gcc atc tcc gtg gtg aag atc ctg    2688
Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu
                      885               890               895

agg gtg ctg agg gtg ctc cga cca ctc aga gcc atc aac aga gcc aag    2736
Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys
                900               905               910

ggg ttg aag cac gtg gct agg tgc atg ttc gtg gcc atc agc acc atc    2784
Gly Leu Lys His Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile
            915               920               925

ggg aac atc gtg ctg gtc act acc ctc cta cag ttc atg ttt gcc tgc    2832
Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys
            930               935               940

atc ggc gtc cag ctc ttc aag ggg aag ttc ttc agg tgc acc gac ttg    2880
Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu
945               950               955               960

tcc aag atg aca gag gag gag tgc agg ggc tac tac tac gtg tac aag    2928
Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys
                965               970               975

gac ggg gac ccc atg cag ata gag ctg cgt cac cgc gag tgg gta cac    2976
Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His
            980               985               990

agc gac ttc cac ttc gac aat gtg  ctc tca gcc atg atg  tcc ctc ttc    3024
Ser Asp Phe His Phe Asp Asn Val  Leu Ser Ala Met Met  Ser Leu Phe
            995               1000              1005

acg gtc  tcc acc ttc gag gga  tgg cct cag ctg ctg  tac aag gcc       3069
Thr Val  Ser Thr Phe Glu Gly  Trp Pro Gln Leu Leu  Tyr Lys Ala
    1010              1015              1020

ata gac  tcc aat gcg gag gac  gtg ggt ccc atc tac  aac aac cgt       3114
Ile Asp  Ser Asn Ala Glu Asp  Val Gly Pro Ile Tyr  Asn Asn Arg
    1025              1030              1035

gtg gag  atg gcc atc ttc ttc  atc atc tac atc atc  ctc att gcc       3159
Val Glu  Met Ala Ile Phe Phe  Ile Ile Tyr Ile Ile  Leu Ile Ala
    1040              1045              1050

ttc ttc  atg atg aac atc ttt  gtg ggc ttc gtc att  gtc acc ttc       3204
Phe Phe  Met Met Asn Ile Phe  Val Gly Phe Val Ile  Val Thr Phe
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cag gag  cag gga gag act gag  tac aag aac tgt gag  ctg gac aag       3249
Gln Glu  Gln Gly Glu Thr Glu  Tyr Lys Asn Cys Glu  Leu Asp Lys
    1070              1075              1080

aac cag  cgc caa tgt gta cag  tat gcc ctg aag gcc  cgc cca ctg       3294
Asn Gln  Arg Gln Cys Val Gln  Tyr Ala Leu Lys Ala  Arg Pro Leu
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agg tgc  tac att ccc aaa aac  cca tac cag tac cag  gtg tgg tac       3339
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4

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att gtc acc tcc tcc tac ttt  gaa tac ctg atg ttt  gcc ctc atc        3384
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Met Leu Asn Thr Ile Cys Leu  Gly Met Gln His Tyr  Asn Gln Ser
    1130            1135               1140

gag cag atg aac cac atc tca  gac atc ctc aat gtg  gcc ttc act        3474
Glu Gln Met Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr
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atc atc ttc acc ctg gag atg  atc ctc aag ctc atg  gcc ttc aag        3519
Ile Ile Phe Thr Leu Glu Met  Ile Leu Lys Leu Met  Ala Phe Lys
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gcc agg ggc tac ttt gga aac  ccc tgg aat gtg ttt  gac ttc ctg        3564
Ala Arg Gly Tyr Phe Gly Asn  Pro Trp Asn Val Phe  Asp Phe Leu
    1175            1180               1185

att gtc att ggc agc atc att  gat gtc atc ctc agt  gag atc gac        3609
Ile Val Ile Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp
    1190            1195               1200

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Asp Pro Asp Glu Ser Ala Arg  Ile Ser Ser Ala Phe  Phe Arg Leu
    1205            1210               1215

ttc cgt gtc atg agg ctg atc  aag ctg ctg agc cgg  gca gaa gga        3699
Phe Arg Val Met Arg Leu Ile  Lys Leu Leu Ser Arg  Ala Glu Gly
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gtg cga acc ctc ctg tgg acg  ttc atc aag tcc ttc  cag gcc cta        3744
Val Arg Thr Leu Leu Trp Thr  Phe Ile Lys Ser Phe  Gln Ala Leu
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ccc tac gtg gct ctg ctc atc  gtc atg ctc ttc ttc  atc tac gct        3789
Pro Tyr Val Ala Leu Leu Ile  Val Met Leu Phe Phe  Ile Tyr Ala
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gtc atc ggc atg cag atg ttt  ggg aag atc gcc ttg  gtg gat ggg        3834
Val Ile Gly Met Gln Met Phe  Gly Lys Ile Ala Leu  Val Asp Gly
    1265            1270               1275

acc caa ata aac cgg aac aac  aac ttc cag acc ttc  cca caa gct        3879
Thr Gln Ile Asn Arg Asn Asn  Asn Phe Gln Thr Phe  Pro Gln Ala
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gtg cta ctg ctc ttc agg tgt  gca aca ggt gag gcc  tgg cag gag        3924
Val Leu Leu Leu Phe Arg Cys  Ala Thr Gly Glu Ala  Trp Gln Glu
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atc cta ctg gcc tgc agc tat  ggg aag ctg tgt gac  cca gag tcg        3969
Ile Leu Leu Ala Cys Ser Tyr  Gly Lys Leu Cys Asp  Pro Glu Ser
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gac tat gcc cca ggg gag gag  tac aca tgt ggc acc  aac ttt gca        4014
Asp Tyr Ala Pro Gly Glu Glu  Tyr Thr Cys Gly Thr  Asn Phe Ala
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tac tac tac ttc atc agc ttc  tac atg ctc tgt gcc  ttc ctg gtc        4059
Tyr Tyr Tyr Phe Ile Ser Phe  Tyr Met Leu Cys Ala  Phe Leu Val
    1340            1345               1350

atc aac ctc ttt gtg gct gtc  atc atg gac aat ttt  gac tac ctc        4104
Ile Asn Leu Phe Val Ala Val  Ile Met Asp Asn Phe  Asp Tyr Leu
    1355            1360               1365

acc cgg gac tgg tcc atc ctg  ggc cct cat cac ctg  gat gag ttc        4149
Thr Arg Asp Trp Ser Ile Leu  Gly Pro His His Leu  Asp Glu Phe
    1370            1375               1380

aag gcc atc tgg gca gag tat  gac cca gag gct aag  ggg agg atc        4194
Lys Ala Ile Trp Ala Glu Tyr  Asp Pro Glu Ala Lys  Gly Arg Ile
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5

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aaa cac ctg gac gtg gtg acc   ctg ctg aga agg att   cag ccc cct       4239
Lys His Leu Asp Val Val Thr   Leu Leu Arg Arg Ile   Gln Pro Pro
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ctg ggc ttt ggg aag ttc tgc   cca cat cgg gta gct   tgt aag cgg       4284
Leu Gly Phe Gly Lys Phe Cys   Pro His Arg Val Ala   Cys Lys Arg
        1415            1420                 1425

ctg gtg ggc atg aac atg ccc   ctg aac agc gac ggc   aca gtc acc       4329
Leu Val Gly Met Asn Met Pro   Leu Asn Ser Asp Gly   Thr Val Thr
        1430            1435                 1440

ttc aat gcc aca ctc ttt gcc   ctg gtc cgc acg gca   ctc aag atc       4374
Phe Asn Ala Thr Leu Phe Ala   Leu Val Arg Thr Ala   Leu Lys Ile
        1445            1450                 1455

aag acg gaa ggt aac ttt gag   cag gcc aac gag gag   ctg agg gcc       4419
Lys Thr Glu Gly Asn Phe Glu   Gln Ala Asn Glu Glu   Leu Arg Ala
        1460            1465                 1470

atc atc aag aag atc tgg aag   aga acc agc atg aag   ctc ttg gac       4464
Ile Ile Lys Lys Ile Trp Lys   Arg Thr Ser Met Lys   Leu Leu Asp
        1475            1480                 1485

cag gtc atc cct cca ata gga   gat gat gag gtg aca   gtg ggg aag       4509
Gln Val Ile Pro Pro Ile Gly   Asp Asp Glu Val Thr   Val Gly Lys
        1490            1495                 1500

ttc tac gcc aca ttc ctc atc   cag gag cac ttc cgg   aag ttc atg       4554
Phe Tyr Ala Thr Phe Leu Ile   Gln Glu His Phe Arg   Lys Phe Met
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aaa cgc caa gag gag tat tat   ggc tat cgg ccc aag   aag gac att       4599
Lys Arg Gln Glu Glu Tyr Tyr   Gly Tyr Arg Pro Lys   Lys Asp Ile
        1520            1525                 1530

gta cag atc cag gca ggg ctg   cgg acc att gag gaa   gag gca gcc       4644
Val Gln Ile Gln Ala Gly Leu   Arg Thr Ile Glu Glu   Glu Ala Ala
        1535            1540                 1545

ccc gag atc tgt cgc acg gtc   tca gga gac ctg gct   gct gag gag       4689
Pro Glu Ile Cys Arg Thr Val   Ser Gly Asp Leu Ala   Ala Glu Glu
        1550            1555                 1560

gag ctg gag aga gcc atg gtg   gag gct gcg atg gag   gag ggg ata       4734
Glu Leu Glu Arg Ala Met Val   Glu Ala Ala Met Glu   Glu Gly Ile
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ttc cgg agg act gga ggc ctg   ttt ggc cag gtg gac   aac ttc ctg       4779
Phe Arg Arg Thr Gly Gly Leu   Phe Gly Gln Val Asp   Asn Phe Leu
        1580            1585                 1590

gaa agg acc aac tcc ctg ccc   cct gtc atg gcc aat   cag aga ccc       4824
Glu Arg Thr Asn Ser Leu Pro   Pro Val Met Ala Asn   Gln Arg Pro
        1595            1600                 1605

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Leu Gln Phe Ala Glu Ile Glu   Met Glu Glu Met Glu   Ser Pro Val
        1610            1615                 1620

ttc ttg gag gac ttc cca caa   gat cca cgc acc aac   ccc ctg gct       4914
Phe Leu Glu Asp Phe Pro Gln   Asp Pro Arg Thr Asn   Pro Leu Ala
        1625            1630                 1635

cgt gcc aat acc aac aat gcc   aac gcc aat gtc gcc   tat gcg aac       4959
Arg Ala Asn Thr Asn Asn Ala   Asn Ala Asn Val Ala   Tyr Ala Asn
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agc aac cat agc aac agc cat   gtg ttt tcc agt gtc   cac tat gaa       5004
Ser Asn His Ser Asn Ser His   Val Phe Ser Ser Val   His Tyr Glu
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agg gag ttc cca gaa gag aca   gag acg cct gct acc   aga gga cga       5049
Arg Glu Phe Pro Glu Glu Thr   Glu Thr Pro Ala Thr   Arg Gly Arg
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6

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gcc ctt  ggc caa ccc tgc agg  tcc ctg gga ccc cac  agc aaa ccc        5094
Ala Leu  Gly Gln Pro Cys Arg  Ser Leu Gly Pro His  Ser Lys Pro
    1685             1690                 1695

tgt gtg  gag atg ctg aag gga  ctg ctg acc cag agg  gca atg ccc        5139
Cys Val  Glu Met Leu Lys Gly  Leu Leu Thr Gln Arg  Ala Met Pro
    1700             1705                 1710

aga ggc  cag gca cct cct gcc  ccc tgc cag tgc ccc  agg gtg gag        5184
Arg Gly  Gln Ala Pro Pro Ala  Pro Cys Gln Cys Pro  Arg Val Glu
    1715             1720                 1725

tcc tcc  atg cct gag gac aga  aag agc tcc aca cca  ggg tct ctt        5229
Ser Ser  Met Pro Glu Asp Arg  Lys Ser Ser Thr Pro  Gly Ser Leu
    1730             1735                 1740

cat gag  gag aca ccc cac agc  agg agc acc agg gag  aat act tcc        5274
His Glu  Glu Thr Pro His Ser  Arg Ser Thr Arg Glu  Asn Thr Ser
    1745             1750                 1755

agg tgc  tca gca cca gct aca  gcc ctg ctg atc caa  aag gct ctg        5319
Arg Cys  Ser Ala Pro Ala Thr  Ala Leu Leu Ile Gln  Lys Ala Leu
    1760             1765                 1770

gtt cga  ggg ggc ctg ggc acc  ttg gca gct gat gca  aac ttc atc        5364
Val Arg  Gly Gly Leu Gly Thr  Leu Ala Ala Asp Ala  Asn Phe Ile
    1775             1780                 1785

atg gca  aca ggc cag gcc ctc  gga gat gcc tgc caa  atg gaa cca        5409
Met Ala  Thr Gly Gln Ala Leu  Gly Asp Ala Cys Gln  Met Glu Pro
    1790             1795                 1800

gag gaa  gtg gag atc atg gca  aca gag cta ctg aaa  gga cga gag        5454
Glu Glu  Val Glu Ile Met Ala  Thr Glu Leu Leu Lys  Gly Arg Glu
    1805             1810                 1815

gcc cca  gac ggc atg gcc agc  tcc ctg gga tgc ctg  aac ctc ggg        5499
Ala Pro  Asp Gly Met Ala Ser  Ser Leu Gly Cys Leu  Asn Leu Gly
    1820             1825                 1830

tcc tcc  ctg ggc agc ctc gac  caa cac cag ggc tcc  cag gag acc        5544
Ser Ser  Leu Gly Ser Leu Asp  Gln His Gln Gly Ser  Gln Glu Thr
    1835             1840                 1845

ctt att  cct cca agg ctg tga                                          5565
Leu Ile  Pro Pro Arg Leu
    1850


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Met Glu Pro Ser Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro
1               5                   10                  15


Lys Lys Pro Val Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe
            20                  25                  30


Cys Leu Thr Leu Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val
        35                  40                  45


Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn
        50                  55                  60


Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn
65                  70                  75                  80


Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val
                85                  90                  95
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7

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Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe
        100               105               110

His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr
        115               120               125

Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val   .
    130               135               140

Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp
145               150               155               160

Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
            165               170               175

Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala
            180               185               190

Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile
        195               200               205

Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys
    210               215               220

Thr Cys Tyr Phe Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu
225               230               235               240

Glu Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile
            245               250               255

Asn Gly Ser Glu Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile
            260               265               270

Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys
        275               280               285

Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala
    290               295               300

Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu
305               310               315               320

Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu
                325               330               335

Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys
            340               345               350

Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser
        355               360               365

Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly
    370               375               380

Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu
385               390               395               400
```

8

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Ile Ala Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln
            405             410                 415

Trp Asn Arg Ile Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys
            420             425                 430

Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser
            435             440                 445

Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln
    450             455             460

Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu
465             470             475                 480

Met Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe
            485             490                 495

Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu
            500             505             510

Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg
            515             520             525

Cys Ile Arg Leu Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser
    530             535             540

Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala
545             550             555             560

Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu
            565             570             575

Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val
            580             585             590

Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe
            595             600             605

Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile
    610             615             620

Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr
625             630             635             640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe
            645             650             655

Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser
            660             665             670

Ala Gln Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys
            675             680             685

Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys
            690             695             700
```

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Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu
705             710             715             720

Lys Ile Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr
            725             730             735

Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile
            740             745             750

Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu
            755             760             765

Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro
    770             775             780

Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp
785             790             795             800

Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu
                805             810             815

Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu
            820             825             830

Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val
        835             840             845

Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys
    850             855             860

Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu
865             870             875             880

Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu
            885             890             895

Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys
        900             905             910

Gly Leu Lys His Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile
    915             920             925

Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys
    930             935             940

Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu
945             950             955             960

Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys
            965             970             975

Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His
            980             985             990

Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala Met Met  Ser Leu Phe
        995             1000            1005
```

10

Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu Leu Tyr Lys Ala
    1010   1015   1020

Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr Asn Asn Arg
    1025   1030   1035

Val Glu Met Ala Ile Phe Phe Ile Ile Tyr Ile Ile Leu Ile Ala
    1040   1045   1050

Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr Phe
    1055   1060   1065

Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys
    1070   1075   1080

Asn Gln Arg Gln Cys Val Gln Tyr Ala Leu Lys Ala Arg Pro Leu
    1085   1090   1095

Arg Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr
    1100   1105   1110

Ile Val Thr Ser Ser Tyr Phe Glu Tyr Leu Met Phe Ala Leu Ile
    1115   1120   1125

Met Leu Asn Thr Ile Cys Leu Gly Met Gln His Tyr Asn Gln Ser
    1130   1135   1140

Glu Gln Met Asn His Ile Ser Asp Ile Leu Asn Val Ala Phe Thr
    1145   1150   1155

Ile Ile Phe Thr Leu Glu Met Ile Leu Lys Leu Met Ala Phe Lys
    1160   1165   1170

Ala Arg Gly Tyr Phe Gly Asn Pro Trp Asn Val Phe Asp Phe Leu
    1175   1180   1185

Ile Val Ile Gly Ser Ile Ile Asp Val Ile Leu Ser Glu Ile Asp
    1190   1195   1200

Asp Pro Asp Glu Ser Ala Arg Ile Ser Ser Ala Phe Phe Arg Leu
    1205   1210   1215

Phe Arg Val Met Arg Leu Ile Lys Leu Leu Ser Arg Ala Glu Gly
    1220   1225   1230

Val Arg Thr Leu Leu Trp Thr Phe Ile Lys Ser Phe Gln Ala Leu
    1235   1240   1245

Pro Tyr Val Ala Leu Leu Ile Val Met Leu Phe Phe Ile Tyr Ala
    1250   1255   1260

Val Ile Gly Met Gln Met Phe Gly Lys Ile Ala Leu Val Asp Gly
    1265   1270   1275

Thr Gln Ile Asn Arg Asn Asn Asn Phe Gln Thr Phe Pro Gln Ala
    1280   1285   1290

11

Val Leu Leu Leu Phe Arg Cys Ala Thr Gly Glu Ala Trp Gln Glu
    1295   1300   1305

Ile Leu Leu Ala Cys Ser Tyr Gly Lys Leu Cys Asp Pro Glu Ser
    1310   1315   1320

Asp Tyr Ala Pro Gly Glu Glu Tyr Thr Cys Gly Thr Asn Phe Ala
    1325   1330   1335

Tyr Tyr Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe Leu Val
    1340   1345   1350

Ile Asn Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu
    1355   1360   1365

Thr Arg Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe
    1370   1375   1380

Lys Ala Ile Trp Ala Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile
    1385   1390   1395

Lys His Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro
    1400   1405   1410

Leu Gly Phe Gly Lys Phe Cys Pro His Arg Val Ala Cys Lys Arg
    1415   1420   1425

Leu Val Gly Met Asn Met Pro Leu Asn Ser Asp Gly Thr Val Thr
    1430   1435   1440

Phe Asn Ala Thr Leu Phe Ala Leu Val Arg Thr Ala Leu Lys Ile
    1445   1450   1455

Lys Thr Glu Gly Asn Phe Glu Gln Ala Asn Glu Glu Leu Arg Ala
    1460   1465   1470

Ile Ile Lys Lys Ile Trp Lys Arg Thr Ser Met Lys Leu Leu Asp
    1475   1480   1485

Gln Val Ile Pro Pro Ile Gly Asp Asp Glu Val Thr Val Gly Lys
    1490   1495   1500

Phe Tyr Ala Thr Phe Leu Ile Gln Glu His Phe Arg Lys Phe Met
    1505   1510   1515

Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg Pro Lys Lys Asp Ile
    1520   1525   1530

Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu Glu Glu Ala Ala
    1535   1540   1545

Pro Glu Ile Cys Arg Thr Val Ser Gly Asp Leu Ala Ala Glu Glu
    1550   1555   1560

Glu Leu Glu Arg Ala Met Val Glu Ala Ala Met Glu Glu Gly Ile
    1565   1570   1575

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Phe Arg  Arg Thr Gly Gly Leu  Phe Gly Gln Val Asp  Asn Phe Leu
    1580                 1585                 1590

Glu Arg  Thr Asn Ser Leu Pro  Pro Val Met Ala Asn  Gln Arg Pro
    1595                 1600                 1605

Leu Gln  Phe Ala Glu Ile Glu  Met Glu Glu Met Glu  Ser Pro Val
    1610                 1615                 1620

Phe Leu  Glu Asp Phe Pro Gln  Asp Pro Arg Thr Asn  Pro Leu Ala
    1625                 1630                 1635

Arg Ala  Asn Thr Asn Asn Ala  Asn Ala Asn Val Ala  Tyr Ala Asn
    1640                 1645                 1650

Ser Asn  His Ser Asn Ser His  Val Phe Ser Ser Val  His Tyr Glu
    1655                 1660                 1665

Arg Glu  Phe Pro Glu Glu Thr  Glu Thr Pro Ala Thr  Arg Gly Arg
    1670                 1675                 1680

Ala Leu  Gly Gln Pro Cys Arg  Ser Leu Gly Pro His  Ser Lys Pro
    1685                 1690                 1695

Cys Val  Glu Met Leu Lys Gly  Leu Leu Thr Gln Arg  Ala Met Pro
    1700                 1705                 1710

Arg Gly  Gln Ala Pro Pro Ala  Pro Cys Gln Cys Pro  Arg Val Glu
    1715                 1720                 1725

Ser Ser  Met Pro Glu Asp Arg  Lys Ser Ser Thr Pro  Gly Ser Leu
    1730                 1735                 1740

His Glu  Glu Thr Pro His Ser  Arg Ser Thr Arg Glu  Asn Thr Ser
    1745                 1750                 1755

Arg Cys  Ser Ala Pro Ala Thr  Ala Leu Leu Ile Gln  Lys Ala Leu
    1760                 1765                 1770

Val Arg  Gly Gly Leu Gly Thr  Leu Ala Ala Asp Ala  Asn Phe Ile
    1775                 1780                 1785

Met Ala  Thr Gly Gln Ala Leu  Gly Asp Ala Cys Gln  Met Glu Pro
    1790                 1795                 1800

Glu Glu  Val Glu Ile Met Ala  Thr Glu Leu Leu Lys  Gly Arg Glu
    1805                 1810                 1815

Ala Pro  Asp Gly Met Ala Ser  Ser Leu Gly Cys Leu  Asn Leu Gly
    1820                 1825                 1830

Ser Ser  Leu Gly Ser Leu Asp  Gln His Gln Gly Ser  Gln Glu Thr
    1835                 1840                 1845

Leu Ile  Pro Pro Arg Leu
    1850
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13

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Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1               5                   10                  15

caa gcg gac cac gcg aac gag gca aac tat gca aga ggc acc aga ctt    96
Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
            20                  25                  30

cct ctt tct ggt gaa gga cca act tct cag ccg aat agc tcc aag caa    144
Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
        35                  40                  45

act gtc ctg tct tgg caa gct gca atc gat gct gct aga cag gcc aag    192
Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
    50                  55                  60

gct gcc caa act atg agc acc tct gca ccc cca cct gta gga tct ctc    240
Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
65                  70                  75                  80

tcc caa aga aaa cgt cag caa tac gcc aag agc aaa aaa cag ggt aac    288
Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85                  90                  95

tcg tcc aac agc cga cct gcc cgc gcc ctt ttc tgt tta tca ctc aat    336
Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
            100                 105                 110

aac ccc atc cga aga gcc tgc att agt ata gtg gaa tgg aaa cca ttt    384
Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
            115                 120                 125

gac ata ttt ata tta ttg gct att ttt gcc aat tgt gtg gcc tta gct    432
Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
        130                 135                 140

att tac atc cca ttc cct gaa gat gat tct aat tca aca aat cat aac    480
Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145                 150                 155                 160

ttg gaa aaa gta gaa tat gcc ttc ctg att att ttt aca gtc gag aca    528
Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
                165                 170                 175

ttt ttg aag att ata gcg tat gga tta ttg cta cat cct aat gct tat    576
Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180                 185                 190

gtt agg aat gga tgg aat tta ctg gat ttt gtt ata gta ata gta gga    624
Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
            195                 200                 205

ttg ttt agt gta att ttg gaa caa tta acc aaa gaa aca gaa ggc ggg    672
Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
        210                 215                 220

aac cac tca agc ggc aaa tct gga ggc ttt gat gtc aaa gcc ctc cgt    720
Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225                 230                 235                 240

gcc ttt cga gtg ttg cga cca ctt cga cta gtg tca ggg gtg ccc agt    768
Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
                245                 250                 255

tta caa gtt gtc ctg aac tcc att ata aaa gcc atg gtt ccc ctc ctt    816
Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260                 265                 270
```

14

```
cac ata gcc ctt ttg gta tta ttt gta atc ata atc tat gct att ata      864
His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
        275             280             285

gga ttg gaa ctt ttt att gga aaa atg cac aaa aca tgt ttt ttt gct      912
Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
        290             295             300

gac tca gat atc gta gct gaa gag gac cca gct cca tgt gcg ttc tca      960
Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305             310             315             320

ggg aat gga cgc cag tgt act gcc aat ggc acg gaa tgt agg agt ggc     1008
Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
                325             330             335

tgg gtt ggc ccg aac gga ggc atc acc aac ttt gat aac ttt gcc ttt     1056
Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
                340             345             350

gcc atg ctt act gtg ttt cag tgc atc acc atg gag ggc tgg aca gac     1104
Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
                355             360             365

gtg ctc tac tgg gta aat gat gcg ata gga tgg gaa tgg cca tgg gtg     1152
Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
        370             375             380

tat ttt gtt agt ctg atc atc ctt ggc tca ttt ttc gtc ctt aac ctg     1200
Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385             390             395             400

gtt ctt ggt gtc ctt agt gga gaa ttc tca aag gaa aga gag aag gca     1248
Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
                405             410             415

aaa gca cgg gga gat ttc cag aag ctc cgg gag aag cag cag ctg gag     1296
Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
                420             425             430

gag gat cta aag ggc tac ttg gat tgg atc acc caa gct gag gac atc     1344
Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
        435             440             445

gat ccg gag aat gag gaa gaa gga gga gag gaa ggc aaa cga aat act     1392
Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
        450             455             460

agc atg ccc acc agc gag act gag tct gtg aac aca gag aac gtc agc     1440
Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465             470             475             480

ggt gaa ggc gag aac cga ggc tgc tgt gga agt ctc tgg tgc tgg tgg     1488
Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
                485             490             495

aga cgg aga ggc gcg gcc aag gcg ggg ccc tct ggg tgt cgg cgg tgg     1536
Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
        500             505             510

ggt caa gcc atc tca aaa tcc aaa ctc agc cga cgc tgg cgt cgc tgg     1584
Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
        515             520             525

aac cga ttc aat cgc aga aga tgt agg gcc gcc gtg aag tct gtc acg     1632
Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
        530             535             540

ttt tac tgg ctg gtt atc gtc ctg gtg ttt ctg aac acc tta acc att     1680
Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545             550             555             560

tcc tct gag cac tac aat cag cca gat tgg ttg aca cag att caa gat     1728
Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
            565             570             575
```

15

```
att gcc aac aaa gtc ctc ttg gct ctg ttc acc tgc gag atg ctg gta        1776
Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
            580                 585                 590

aaa atg tac agc ttg ggc ctc caa gca tat ttc gtc tct ctt ttc aac        1824
Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
            595                 600                 605

cgg ttt gat tgc ttc gtg gtg tgt ggt gga atc act gag acg atc ctg        1872
Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
            610                 615                 620

gtg gaa ctg gaa atc atg tct ccc ctg ggg atc tct gtg ttt cgg tgt        1920
Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625                 630                 635                 640

gtg cgc ctc tta aga atc ttc aaa gtg acc agg cac tgg act tcc ctg        1968
Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
                645                 650                 655

agc aac tta gtg gca tcc tta tta aac tcc atg aag tcc atc gct tcg        2016
Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
            660                 665                 670

ctg ttg ctt ctg ctt ttt ctc ttc att atc atc ttt tcc ttg ctt ggg        2064
Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
            675                 680                 685

atg cag ctg ttt ggc ggc aag ttt aat ttt gat gaa acg caa acc aag        2112
Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
            690                 ·695                700

cgg agc acc ttt gac aat ttc cct caa gca ctt ctc aca gtg ttc cag        2160
Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705                 710                 715                 720

atc ctg aca ggc gaa gac tgg aat gct gtg atg tac gat ggc atc atg        2208
Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
                725                 730                 735

gct tac ggg ggc cca tcc tct tca gga atg atc gtc tgc atc tac ttc        2256
Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
            740                 745                 750

atc atc ctc ttc att tgt ggt aac tat att cta ctg aat gtc ttc ttg        2304
Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
            755                 760                 765

gcc atc gct gta gac aat ttg gct gat gct gaa agt ctg aac act gct        2352
Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
            770                 775                 780

cag aaa gaa gaa gcg gaa gaa aag gag agg aaa aag att gcc aga aaa        2400
Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785                 790                 795                 800

gag agc cta gaa aat aaa aag aac aac aaa cca gaa gtc aac cag ata        2448
Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
                805                 810                 815

gcc aac agt gac aac aag gtt aca att gat gac tat aga gaa gag gat        2496
Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
            820                 825                 830

gaa gac aag gac ccc tat ccg cct tgc gat gtg cca gta ggg gaa gag        2544
Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
            835                 840                 845

gaa gag gaa gag gag gag gat gaa cct gag gtt cct gcc gga ccc cgt        2592
Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
            850                 855                 860

cct cga agg atc tcg gag ttg aac atg aag gaa aaa att gcc ccc atc        2640
Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865                 870                 875                 880
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16

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cct gaa ggg agc gct ttc ttc att ctt agc aag acc aac ccg atc cgc        2688
Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
            885                     890                 895

gta ggc tgc cac aag ctc atc aac cac cac atc ttc acc aac ctc atc        2736
Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
            900                     905                 910

ctt gtc ttc atc atg ctg agc agc gct gcc ctg gcc gca gag gac ccc        2784
Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
            915                     920                 925

atc cgc agc cac tcc ttc cgg aac acg ata ctg ggt tac ttt gac tat        2832
Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
            930                     935                 940

gcc ttc aca gcc atc ttt act gtt gag atc ctg ttg aag atg aca act        2880
Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945                     950                     955                 960

ttt gga gct ttc ctc cac aaa ggg gcc ttc tgc agg aac tac ttc aat        2928
Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
                    965                     970                 975

ttg ctg gat atg ctg gtg gtt ggg gtg tct ctg gtg tca ttt ggg att        2976
Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
                    980                     985                 990

caa tcc agt gcc atc tcc gtt gtg  aag att ctg agg gtc  tta agg gtc     3024
Gln Ser Ser Ala Ile Ser Val Val  Lys Ile Leu Arg Val  Leu Arg Val
            995                 1000                1005

ctg cgt ccc ctc agg gcc atc  aac aga gca aaa gga  ctt aag cac          3069
Leu Arg Pro Leu Arg Ala Ile  Asn Arg Ala Lys Gly  Leu Lys His
    1010                1015                1020

gtg gtc cag tgc gtc ttc gtg  gcc atc cgg acc atc  ggc aac atc          3114
Val Val Gln Cys Val Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile
    1025                1030                1035

atg atc gtc act acc ctc ctg  cag ttc atg ttt gcc  tgt atc ggg          3159
Met Ile Val Thr Thr Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly
    1040                1045                1050

gtc cag ttg ttc aag ggg aag  ttc tat cgc tgt acg  gat gaa gcc          3204
Val Gln Leu Phe Lys Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala
    1055                1060                1065

aaa agt aac cct gaa gaa tgc  agg gga ctt ttc atc  ctc tac aag          3249
Lys Ser Asn Pro Glu Glu Cys  Arg Gly Leu Phe Ile  Leu Tyr Lys
    1070                1075                1080

gat ggg gat gtt gac agt cct  gtg gtc cgt gaa cgg  atc tgg caa          3294
Asp Gly Asp Val Asp Ser Pro  Val Val Arg Glu Arg  Ile Trp Gln
    1085                1090                1095

aac agt gat ttc aac ttc gac  aac gtc ctc tct gct  atg atg gcg          3339
Asn Ser Asp Phe Asn Phe Asp  Asn Val Leu Ser Ala  Met Met Ala
    1100                1105                1110

ctc ttc aca gtc tcc acg ttt  gag ggc tgg cct gcg  ttg ctg tat          3384
Leu Phe Thr Val Ser Thr Phe  Glu Gly Trp Pro Ala  Leu Leu Tyr
    1115                1120                1125

aaa gcc atc gac tcg aat gga  gag aac atc ggc cca  atc tac aac          3429
Lys Ala Ile Asp Ser Asn Gly  Glu Asn Ile Gly Pro  Ile Tyr Asn
    1130                1135                1140

cac cgc gtg gag atc tcc atc  ttc ttc atc atc tac  atc atc att          3474
His Arg Val Glu Ile Ser Ile  Phe Phe Ile Ile Tyr  Ile Ile Ile
    1145                1150                1155

gta gct ttc ttc atg atg aac  atc ttt gtg ggc ttt  gtc atc gtt          3519
Val Ala Phe Phe Met Met Asn  Ile Phe Val Gly Phe  Val Ile Val
    1160                1165                1170
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17

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aca ttt cag gaa caa gga gaa  aaa gag tat aag aac  tgt gag ctg        3564
Thr Phe Gln Glu Gln Gly Glu  Lys Glu Tyr Lys Asn  Cys Glu Leu
    1175            1180                1185

gac aaa aat cag cgt cag tgt  gtt gaa tac gcc ttg  aaa gca cgt        3609
Asp Lys Asn Gln Arg Gln Cys  Val Glu Tyr Ala Leu  Lys Ala Arg
    1190            1195                1200

ccc ttg cgg aga tac atc ccc  aaa aac ccc tac cag  tac aag ttc        3654
Pro Leu Arg Arg Tyr Ile Pro  Lys Asn Pro Tyr Gln  Tyr Lys Phe
    1205            1210                1215

tgg tac gtg gtg aac tct tcg  cct ttc gaa tac atg  atg ttt gtc        3699
Trp Tyr Val Val Asn Ser Ser  Pro Phe Glu Tyr Met  Met Phe Val
    1220            1225                1230

ctc atc atg ctc aac aca ctc  tgc ttg gcc atg cag  cac tac gag        3744
Leu Ile Met Leu Asn Thr Leu  Cys Leu Ala Met Gln  His Tyr Glu
    1235            1240                1245

cag tcc aag atg ttc aat gat  gcc atg gac att ctg  aac atg gtc        3789
Gln Ser Lys Met Phe Asn Asp  Ala Met Asp Ile Leu  Asn Met Val
    1250            1255                1260

ttc acc ggg gtg ttc acc gtc  gag atg gtt ttg aaa  gtc atc gca        3834
Phe Thr Gly Val Phe Thr Val  Glu Met Val Leu Lys  Val Ile Ala
    1265            1270                1275

ttt aag cct aag ggg tat ttt  agt gac gcc tgg aac  acg ttt gac        3879
Phe Lys Pro Lys Gly Tyr Phe  Ser Asp Ala Trp Asn  Thr Phe Asp
    1280            1285                1290

tcc ctc atc gta atc ggc agc  att ata gac gtg gcc  ctc agc gaa        3924
Ser Leu Ile Val Ile Gly Ser  Ile Ile Asp Val Ala  Leu Ser Glu
    1295            1300                1305

gcg gac aac tct gaa gag agc  aat aga atc tcc atc  acc ttt ttc        3969
Ala Asp Asn Ser Glu Glu Ser  Asn Arg Ile Ser Ile  Thr Phe Phe
    1310            1315                1320

cgt ctt ttc cga gtg atg cga  ttg gtg aag ctt ctc  agc agg ggg        4014
Arg Leu Phe Arg Val Met Arg  Leu Val Lys Leu Leu  Ser Arg Gly
    1325            1330                1335

gaa ggc atc cgg aca ttg ctg  tgg act ttt att aag  tcc ttt cag        4059
Glu Gly Ile Arg Thr Leu Leu  Trp Thr Phe Ile Lys  Ser Phe Gln
    1340            1345                1350

gcg ctc ccg tat gtg gcc ctc  ctc ata gcc atg ctg  ttc ttc atc        4104
Ala Leu Pro Tyr Val Ala Leu  Leu Ile Ala Met Leu  Phe Phe Ile
    1355            1360                1365

tat gcg gtc att ggc atg cag  atg ttt ggg aaa gtt  gcc atg aga        4149
Tyr Ala Val Ile Gly Met Gln  Met Phe Gly Lys Val  Ala Met Arg
    1370            1375                1380

gat aac aac cag atc aat agg  aac aat aac ttc cag  acg ttt ccc        4194
Asp Asn Asn Gln Ile Asn Arg  Asn Asn Asn Phe Gln  Thr Phe Pro
    1385            1390                1395

cag gcg gtg ctg ctg ctc ttc  agg tgt gca aca ggt  gag gcc tgg        4239
Gln Ala Val Leu Leu Leu Phe  Arg Cys Ala Thr Gly  Glu Ala Trp
    1400            1405                1410

cag gag atc atg ctg gcc tgt  ctc cca ggg aag ctc  tgt gac cct        4284
Gln Glu Ile Met Leu Ala Cys  Leu Pro Gly Lys Leu  Cys Asp Pro
    1415            1420                1425

gag tca gat tac aac ccc ggg  gag gag tat aca tgt  ggg agc aac        4329
Glu Ser Asp Tyr Asn Pro Gly  Glu Glu Tyr Thr Cys  Gly Ser Asn
    1430            1435                1440

ttt gcc att gtc tat ttc atc  agt ttt tac atg ctc  tgt gca ttt        4374
Phe Ala Ile Val Tyr Phe Ile  Ser Phe Tyr Met Leu  Cys Ala Phe
    1445            1450                1455
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18

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ctg atc atc aat ctg ttt gtg   gct gtc atc atg gat   aat ttc gac      4419
Leu Ile Ile Asn Leu Phe Val   Ala Val Ile Met Asp   Asn Phe Asp
        1460            1465                 1470

tat ctg acc cgg gac tgg tct   att ttg ggg cct cac   cat tta gat      4464
Tyr Leu Thr Arg Asp Trp Ser   Ile Leu Gly Pro His   His Leu Asp
        1475            1480                 1485

gaa ttc aaa aga ata tgg tca   gaa tat gac cct gag   gca aag gga      4509
Glu Phe Lys Arg Ile Trp Ser   Glu Tyr Asp Pro Glu   Ala Lys Gly
        1490            1495                 1500

agg ata aaa cac ctt gat gtg   gtc act ctg ctt cga   cgc atc cag      4554
Arg Ile Lys His Leu Asp Val   Val Thr Leu Leu Arg   Arg Ile Gln
        1505            1510                 1515

cct ccc ctg ggg ttt ggg aag   tta tgt cca cac agg   gta gcg tgc      4599
Pro Pro Leu Gly Phe Gly Lys   Leu Cys Pro His Arg   Val Ala Cys
        1520            1525                 1530

aag aga tta gtt gcc atg aac   atg cct ctc aac agt   gac ggg aca      4644
Lys Arg Leu Val Ala Met Asn   Met Pro Leu Asn Ser   Asp Gly Thr
        1535            1540                 1545

gtc atg ttt aat gca acc ctg   ttt gct ttg gtt cga   acg gct ctt      4689
Val Met Phe Asn Ala Thr Leu   Phe Ala Leu Val Arg   Thr Ala Leu
        1550            1555                 1560

aag atc aag acc gaa ggg aac   ctg gag caa gct aat   gaa gaa ctt      4734
Lys Ile Lys Thr Glu Gly Asn   Leu Glu Gln Ala Asn   Glu Glu Leu
        1565            1570                 1575

cgg gct gtg ata aag aaa att   tgg aag aaa acc agc   atg aaa tta      4779
Arg Ala Val Ile Lys Lys Ile   Trp Lys Lys Thr Ser   Met Lys Leu
        1580            1585                 1590

ctt gac caa gtt gtc cct cca   gct ggt gat gat gag   gta acc gtg      4824
Leu Asp Gln Val Val Pro Pro   Ala Gly Asp Asp Glu   Val Thr Val
        1595            1600                 1605

ggg aag ttc tat gcc act ttc   ctg ata cag gac tac   ttt agg aaa      4869
Gly Lys Phe Tyr Ala Thr Phe   Leu Ile Gln Asp Tyr   Phe Arg Lys
        1610            1615                 1620

ttc aag aaa cgg aaa gaa caa   gga ctg gtg gga aag   tac cct gcg      4914
Phe Lys Lys Arg Lys Glu Gln   Gly Leu Val Gly Lys   Tyr Pro Ala
        1625            1630                 1635

aag aac acc aca att gcc cta   cag gcg gga tta agg   aca ctg cat      4959
Lys Asn Thr Thr Ile Ala Leu   Gln Ala Gly Leu Arg   Thr Leu His
        1640            1645                 1650

gac att ggg cca gaa atc cgg   cgt gct ata tcg tgt   gat ttg caa      5004
Asp Ile Gly Pro Glu Ile Arg   Arg Ala Ile Ser Cys   Asp Leu Gln
        1655            1660                 1665

gat gac gag cct gag gaa aca   aaa cga gaa gaa gaa   gat gat gtg      5049
Asp Asp Glu Pro Glu Glu Thr   Lys Arg Glu Glu Glu   Asp Asp Val
        1670            1675                 1680

ttc aaa aga aat ggt gcc ctg   ctt gga aac cat gtc   aat cat gtt      5094
Phe Lys Arg Asn Gly Ala Leu   Leu Gly Asn His Val   Asn His Val
        1685            1690                 1695

aat agt gat agg aga gat tcc   ctt cag cag acc aat   acc acc cac      5139
Asn Ser Asp Arg Arg Asp Ser   Leu Gln Gln Thr Asn   Thr Thr His
        1700            1705                 1710

cgt ccc ctg cat gtc caa agg   cct tca att cca cct   gca agt gat      5184
Arg Pro Leu His Val Gln Arg   Pro Ser Ile Pro Pro   Ala Ser Asp
        1715            1720                 1725

act gag aaa ccg ctg ttt cct   cca gca gga aat tcg   gtg tgt cat      5229
Thr Glu Lys Pro Leu Phe Pro   Pro Ala Gly Asn Ser   Val Cys His
        1730            1735                 1740
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19

```
aac cat  cat aac cat aat tcc  ata gga aag caa gtt  ccc acc tca       5274
Asn His  His Asn His Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser
    1745             1750                 1755

aca aat  gcc aat ctc aat aat  gcc aat atg tcc aaa  gct gcc cat       5319
Thr Asn  Ala Asn Leu Asn Asn  Ala Asn Met Ser Lys  Ala Ala His
    1760             1765                 1770

gga aag  cgg ccc agc att ggg  aac ctt gag cat gtg  tct gaa aat       5364
Gly Lys  Arg Pro Ser Ile Gly  Asn Leu Glu His Val  Ser Glu Asn
    1775             1780                 1785

ggg cat  cat tct tcc cac aag  cat gac cgg gag cct  cag aga agg       5409
Gly His  His Ser Ser His Lys  His Asp Arg Glu Pro  Gln Arg Arg
    1790             1795                 1800

tcc agt  gtg aaa aga acc cgc  tat tat gaa act tac  att agg tcc       5454
Ser Ser  Val Lys Arg Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser
    1805             1810                 1815

gac tca  gga gat gaa cag ctc  cca act att tgc cgg  gaa gac cca       5499
Asp Ser  Gly Asp Glu Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro
    1820             1825                 1830

gag ata  cat ggc tat ttc agg  gac ccc cac tgc ttg  ggg gag cag       5544
Glu Ile  His Gly Tyr Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln
    1835             1840                 1845

gag tat  ttc agt agt gag gaa  tgc tac gag gat gac  agc tcg ccc       5589
Glu Tyr  Phe Ser Ser Glu Glu  Cys Tyr Glu Asp Asp  Ser Ser Pro
    1850             1855                 1860

acc tgg  agc agg caa aac tat  ggc tac tac agc aga  tac cca ggc       5634
Thr Trp  Ser Arg Gln Asn Tyr  Gly Tyr Tyr Ser Arg  Tyr Pro Gly
    1865             1870                 1875

aga aac  atc gac tct gag agg  ccc cga ggc tac cat  cat ccc caa       5679
Arg Asn  Ile Asp Ser Glu Arg  Pro Arg Gly Tyr His  His Pro Gln
    1880             1885                 1890

gga ttc  ttg gag gac gat gac  tcg ccc gtt tgc tat  gat tca cgg       5724
Gly Phe  Leu Glu Asp Asp Asp  Ser Pro Val Cys Tyr  Asp Ser Arg
    1895             1900                 1905

aga tct  cca agg aga cgc cta  cta cct ccc acc cca  gca tcc cac       5769
Arg Ser  Pro Arg Arg Arg Leu  Leu Pro Pro Thr Pro  Ala Ser His
    1910             1915                 1920

cgg aga  tcc tcc ttc aac ttt  gag tgc ctg cgc cgg  cag agc agc       5814
Arg Arg  Ser Ser Phe Asn Phe  Glu Cys Leu Arg Arg  Gln Ser Ser
    1925             1930                 1935

cag gaa  gag gtc ccg tcg tct  ccc atc ttc ccc cat  cgc acg gcc       5859
Gln Glu  Glu Val Pro Ser Ser  Pro Ile Phe Pro His  Arg Thr Ala
    1940             1945                 1950

ctg cct  ctg cat cta atg cag  caa cag atc atg gca  gtt gcc ggc       5904
Leu Pro  Leu His Leu Met Gln  Gln Gln Ile Met Ala  Val Ala Gly
    1955             1960                 1965

cta gat  tca agt aaa gcc cag  aag tac tca ccg agt  cac tcg acc       5949
Leu Asp  Ser Ser Lys Ala Gln  Lys Tyr Ser Pro Ser  His Ser Thr
    1970             1975                 1980

cgg tcg  tgg gcc acc cct cca  gca acc cct ccc tac  cgg gac tgg       5994
Arg Ser  Trp Ala Thr Pro Pro  Ala Thr Pro Pro Tyr  Arg Asp Trp
    1985             1990                 1995

aca ccg  tgc tac acc ccc ctg  atc caa gtg gag cag  tca gag gcc       6039
Thr Pro  Cys Tyr Thr Pro Leu  Ile Gln Val Glu Gln  Ser Glu Ala
    2000             2005                 2010

ctg gac  cag gtg aac ggc agc  ctg ccg tcc ctg cac  cgc agc tcc       6084
Leu Asp  Gln Val Asn Gly Ser  Leu Pro Ser Leu His  Arg Ser Ser
    2015             2020                 2025
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20

```
tgg tac  aca gac gag ccc gac  atc tcc tac cgg act  ttc aca cca        6129
Trp Tyr  Thr Asp Glu Pro Asp  Ile Ser Tyr Arg Thr  Phe Thr Pro
    2030             2035               2040

gcc agc  ctg act gtc ccc agc  agc ttc cgg aac aaa  aac agc gac        6174
Ala Ser  Leu Thr Val Pro Ser  Ser Phe Arg Asn Lys  Asn Ser Asp
    2045             2050               2055

aag cag  agg agt gcg gac agc  ttg gtg gag gca gtc  ctg ata tcc        6219
Lys Gln  Arg Ser Ala Asp Ser  Leu Val Glu Ala Val  Leu Ile Ser
    2060             2065               2070

gaa ggc  ttg gga cgc tat gca  agg gac cca aaa ttt  gtg tca gca        6264
Glu Gly  Leu Gly Arg Tyr Ala  Arg Asp Pro Lys Phe  Val Ser Ala
    2075             2080               2085

aca aaa  cac gaa atc gct gat  gcc tgt gac ctc acc  atc gac gag        6309
Thr Lys  His Glu Ile Ala Asp  Ala Cys Asp Leu Thr  Ile Asp Glu
    2090             2095               2100

atg gag  agt gca gcc agc acc  ctg ctt aat ggg aac  gtg cgt ccc        6354
Met Glu  Ser Ala Ala Ser Thr  Leu Leu Asn Gly Asn  Val Arg Pro
    2105             2110               2115

cga gcc  aac ggg gat gtg ggc  ccc ctc tca cac cgg  cag gac tat        6399
Arg Ala  Asn Gly Asp Val Gly  Pro Leu Ser His Arg  Gln Asp Tyr
    2120             2125               2130

gag cta  cag gac ttt ggt cct  ggc tac agc gac gaa  gag cca gac        6444
Glu Leu  Gln Asp Phe Gly Pro  Gly Tyr Ser Asp Glu  Glu Pro Asp
    2135             2140               2145

cct ggg  agg gat gag gag gac  ctg gcg gat gaa atg  ata tgc atc        6489
Pro Gly  Arg Asp Glu Glu Asp  Leu Ala Asp Glu Met  Ile Cys Ile
    2150             2155               2160

acc acc  ttg tag                                                      6501
Thr Thr  Leu
    2165


<210>   4
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Met Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1                   5                   10                  15


Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
                20                  25                  30


Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
            35                  40                  45


Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
        50                  55                  60


Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
65                  70                  75                  80


Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85                  90                  95


Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
                100                 105                 110


Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
                115                 120                 125
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Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
    130               135               140

Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145               150               155               160

Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
            165               170               175

Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180               185               190

Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
        195               200               205

Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
    210               215               220

Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225               230               235               240

Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
            245               250               255

Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260               265               270

His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
        275               280               285

Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
    290               295               300

Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305               310               315               320

Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
            325               330               335

Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
            340               345               350

Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
        355               360               365

Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
    370               375               380

Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385               390               395               400

Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
            405               410               415

Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
            420               425               430
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Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
        435   440   445

Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
        450   455   460

Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465   470   475   480

Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
                485   490   495

Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
                500   505   510

Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
        515   520   525

Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
        530   535   540

Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545   550   555   560

Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
                565   570   575

Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
                580   585   590

Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
        595   600   605

Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
        610   615   620

Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625   630   635   640

Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
                645   650   655

Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
                660   665   670

Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
                675   680   685

Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
        690   695   700

Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705   710   715   720

Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
                725   730   735

23

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Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
        740             745                 750

Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
        755             760                 765

Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
770             775                 780

Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785             790                 795                 800

Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
            805             810                 815

Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
            820             825                 830

Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
        835             840                 845

Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
        850             855                 860

Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865             870             875                 880

Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
            885             890                 895

Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
            900             905             910

Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
        915             920             925

Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
        930             935             940

Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945             950             955                 960

Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
            965             970                 975

Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
            980             985             990

Gln Ser Ser Ala Ile Ser Val Val  Lys Ile Leu Arg Val  Leu Arg Val
        995             1000            1005

Leu Arg  Pro Leu Arg Ala Ile  Asn Arg Ala Lys Gly  Leu Lys His
    1010        1015                1020

Val Val  Gln Cys Val Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile
    1025            1030            1035
```

```
Met Ile  Val Thr Thr Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly
    1040                1045            1050

Val Gln  Leu Phe Lys Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala
    1055                1060            1065

Lys Ser  Asn Pro Glu Glu Cys  Arg Gly Leu Phe Ile  Leu Tyr Lys
    1070                1075            1080

Asp Gly  Asp Val Asp Ser Pro  Val Val Arg Glu Arg  Ile Trp Gln
    1085                1090            1095

Asn Ser  Asp Phe Asn Phe Asp  Asn Val Leu Ser Ala  Met Met Ala ·
    1100                1105            1110

Leu Phe  Thr Val Ser Thr Phe  Glu Gly Trp Pro Ala  Leu Leu Tyr
    1115                1120            1125

Lys Ala  Ile Asp Ser Asn Gly  Glu Asn Ile Gly Pro  Ile Tyr Asn
    1130                1135            1140

His Arg  Val Glu Ile Ser Ile  Phe Phe Ile Ile Tyr  Ile Ile Ile
    1145                1150            1155

Val Ala  Phe Phe Met Met Asn  Ile Phe Val Gly Phe  Val Ile Val
    1160                1165            1170

Thr Phe  Gln Glu Gln Gly Glu  Lys Glu Tyr Lys Asn  Cys Glu Leu
    1175                1180            1185

Asp Lys  Asn Gln Arg Gln Cys  Val Glu Tyr Ala Leu  Lys Ala Arg
    1190                1195            1200

Pro Leu  Arg Arg Tyr Ile Pro  Lys Asn Pro Tyr' Gln  Tyr Lys Phe
    1205                1210            1215

Trp Tyr  Val Val Asn Ser Ser  Pro Phe Glu Tyr Met  Met Phe Val
    1220                1225            1230
         ·

Leu Ile  Met Leu Asn Thr Leu  Cys Leu Ala Met Gln  His Tyr Glu
    1235                1240            1245

Gln Ser  Lys Met Phe Asn Asp  Ala Met Asp Ile Leu  Asn Met Val
    1250                1255            1260

Phe Thr  Gly Val Phe Thr Val  Glu Met Val Leu Lys  Val Ile Ala
    1265                1270            1275

Phe Lys  Pro Lys Gly Tyr Phe  Ser Asp Ala Trp Asn  Thr Phe Asp
    1280                1285            1290

Ser Leu  Ile Val Ile Gly Ser  Ile Ile Asp Val Ala  Leu Ser Glu
    1295                1300            1305

Ala Asp  Asn Ser Glu Glu Ser  Asn Arg Ile Ser Ile  Thr Phe Phe
    1310                1315            1320
```

```
Arg Leu   Phe Arg Val Met Arg   Leu Val Lys Leu Leu   Ser Arg Gly
    1325                  1330                  1335

Glu Gly   Ile Arg Thr Leu Leu   Trp Thr Phe Ile Lys   Ser Phe Gln
    1340                  1345                  1350

Ala Leu   Pro Tyr Val Ala Leu   Leu Ile Ala Met Leu   Phe Phe Ile
    1355                  1360                  1365

Tyr Ala   Val Ile Gly Met Gln   Met Phe Gly Lys Val   Ala Met Arg
    1370                  1375                  1380

Asp Asn   Asn Gln Ile Asn Arg   Asn Asn Asn Phe Gln   Thr Phe Pro
    1385                  1390                  1395

Gln Ala   Val Leu Leu Leu Phe   Arg Cys Ala Thr Gly   Glu Ala Trp
    1400                  1405                  1410

Gln Glu   Ile Met Leu Ala Cys   Leu Pro Gly Lys Leu   Cys Asp Pro
    1415                  1420                  1425

Glu Ser   Asp Tyr Asn Pro Gly   Glu Glu Tyr Thr Cys   Gly Ser Asn
    1430                  1435                  1440

Phe Ala   Ile Val Tyr Phe Ile   Ser Phe Tyr Met Leu   Cys Ala Phe
    1445                  1450                  1455

Leu Ile   Ile Asn Leu Phe Val   Ala Val Ile Met Asp   Asn Phe Asp
    1460                  1465                  1470

Tyr Leu   Thr Arg Asp Trp Ser   Ile Leu Gly Pro His   His Leu Asp
    1475                  1480            ·  1485

Glu Phe   Lys Arg Ile Trp Ser   Glu Tyr Asp Pro Glu   Ala Lys Gly
    1490                  1495                  1500

Arg Ile   Lys His Leu Asp Val   Val Thr Leu Leu Arg   Arg Ile Gln
    1505                  1510                  1515

Pro Pro   Leu Gly Phe Gly Lys   Leu Cys Pro His Arg   Val Ala Cys
    1520                  1525                  1530

Lys Arg   Leu Val Ala Met Asn   Met Pro Leu Asn Ser   Asp Gly Thr
    1535              ·  1540                  1545

Val Met   Phe Asn Ala Thr Leu   Phe Ala Leu Val Arg   Thr Ala Leu
    1550                  1555                  1560

Lys Ile   Lys Thr Glu Gly Asn   Leu Glu Gln Ala Asn   Glu Glu Leu
    1565                  1570                  1575

Arg Ala   Val Ile Lys Lys Ile   Trp Lys Lys Thr Ser   Met Lys Leu
    1580              ·  1585                  1590

Leu Asp   Gln Val Val Pro Pro   Ala Gly Asp Asp Glu   Val Thr Val
    1595                  1600                  1605
```

```
Gly Lys  Phe Tyr Ala Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys
    1610             1615             1620

Phe Lys  Lys Arg Lys Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala
    1625             1630             1635

Lys Asn  Thr Thr Ile Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His
    1640             1645             1650

Asp Ile  Gly Pro Glu Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln
    1655             1660             1665

Asp Asp  Glu Pro Glu Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val
    1670             1675             1680

Phe Lys  Arg Asn Gly Ala Leu  Leu Gly Asn His Val  Asn His Val
    1685             1690             1695

Asn Ser  Asp Arg Arg Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His
    1700             1705             1710

Arg Pro  Leu His Val Gln Arg  Pro Ser Ile Pro Pro  Ala Ser Asp
    1715             1720             1725

Thr Glu  Lys Pro Leu Phe Pro  Pro Ala Gly Asn Ser  Val Cys His
    1730             1735             1740

Asn His  His Asn His Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser
    1745             1750             1755

Thr Asn  Ala Asn Leu Asn Asn  Ala Asn Met Ser Lys  Ala Ala His
    1760             1765             1770

Gly Lys  Arg Pro Ser Ile Gly  Asn Leu Glu His Val  Ser Glu Asn
    1775             1780             1785

Gly His  His Ser Ser His Lys  His Asp Arg Glu Pro  Gln Arg Arg
    1790             1795             1800

Ser Ser  Val Lys Arg Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser
    1805             1810             1815

Asp Ser  Gly Asp Glu Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro
    1820             1825             1830

Glu Ile  His Gly Tyr Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln
    1835             1840             1845

Glu Tyr  Phe Ser Ser Glu Glu  Cys Tyr Glu Asp Asp  Ser Ser Pro
    1850             1855             1860

Thr Trp  Ser Arg Gln Asn Tyr  Gly Tyr Tyr Ser Arg  Tyr Pro Gly
    1865             1870             1875

Arg Asn  Ile Asp Ser Glu Arg  Pro Arg Gly Tyr His  His Pro Gln
    1880             1885             1890
```

27

```
Gly Phe  Leu Glu Asp Asp Asp  Ser Pro Val Cys Tyr  Asp Ser Arg
    1895                 1900              1905

Arg Ser  Pro Arg Arg Arg Leu  Leu Pro Pro Thr Pro  Ala Ser His
    1910                 1915              1920

Arg Arg  Ser Ser Phe Asn Phe  Glu Cys Leu Arg Arg  Gln Ser Ser
    1925                 1930              1935

Gln Glu  Glu Val Pro Ser Ser  Pro Ile Phe Pro His  Arg Thr Ala
    1940                 1945              1950

Leu Pro  Leu His Leu Met Gln  Gln Gln Ile Met Ala  Val Ala Gly
    1955                 1960              1965

Leu Asp  Ser Ser Lys Ala Gln  Lys Tyr Ser Pro Ser  His Ser Thr
    1970                 1975              1980

Arg Ser  Trp Ala Thr Pro Pro  Ala Thr Pro Pro Tyr  Arg Asp Trp
    1985                 1990              1995

Thr Pro  Cys Tyr Thr Pro Leu  Ile Gln Val Glu Gln  Ser Glu Ala
    2000                 2005              2010

Leu Asp  Gln Val Asn Gly Ser  Leu Pro Ser Leu His  Arg Ser Ser
    2015                 2020              2025

Trp Tyr  Thr Asp Glu Pro Asp  Ile Ser Tyr Arg Thr  Phe Thr Pro
    2030                 2035              2040

Ala Ser  Leu Thr Val Pro Ser  Ser Phe Arg Asn Lys  Asn Ser Asp
    2045                 2050              2055

Lys Gln  Arg Ser Ala Asp Ser  Leu Val Glu Ala Val  Leu Ile Ser
    2060                 2065              2070

Glu Gly  Leu Gly Arg Tyr Ala  Arg Asp Pro Lys Phe  Val Ser Ala
    2075                 2080              2085

Thr Lys  His Glu Ile Ala Asp  Ala Cys Asp Leu Thr  Ile Asp Glu
    2090                 2095              2100

Met Glu  Ser Ala Ala Ser Thr  Leu Leu Asn Gly Asn  Val Arg Pro
    2105                 2110              2115

Arg Ala  Asn Gly Asp Val Gly  Pro Leu Ser His Arg  Gln Asp Tyr
    2120                 2125              2130

Glu Leu  Gln Asp Phe Gly Pro  Gly Tyr Ser Asp Glu  Glu Pro Asp
    2135                 2140              2145

Pro Gly  Arg Asp Glu Glu Asp  Leu Ala Asp Glu Met  Ile Cys Ile
    2150                 2155              2160

Thr Thr  Leu
    2165
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28

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agtgcccgca tctccagcgc cttcttccgc ctgttccggg tcatgaggtt gatcaagctg     120

ctgagccgcg ccgagggcgt gcgcacgctg ctccggacct tcatcaagtc cttccaggcc     180

ctgccctacg tggctctgct catcgtcatg ctcttcttca tctatgctgt catcggcatg     240

cagatgtttg ggaagatcgc catggtggac ggaacccaga taaaccggaa caacaatttc     300

cagaccttcc ctcaggctgt gctgctgctc ttcaggtgcg ccacgggtga ggcgtggcag     360

gagatcctgc tggcctgcag gtacgggcag ctgtgcgacc ccgagtcaga ctacctccct     420

ggggaggagt atacctgcgg caccgacttc gcctactact acttcatcag cttctacatg     480

ctctgtgcct tcctgatcat caacctcttt gtggctgtga tcatggacaa ttttgactac     540

ctcacccgga ctggtcc                                                     557


<210>    6
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<212>    DNA
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<222>    (1)..(553)
<223>    n is dATP, dCTP, dGTP, or dTTP

<220>
<221>    misc_feature
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<223>    n is dATP, dCTP, dGTP, or dTTP
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agcaatagaa tctccatcac cttttttccgt cttttccgag tgatgcgatt ggtgaagctt     120

ctcagcaggg gggaaggcat ccggacattg ctgtggactt ttattaagtc ctttcaggcg     180

ctcccgtatg tggccctcct catagccatg ctgttcttca tctatgcggt cattggcatg     240

cagatgtttg ggaaagttgc catgagagat aacaaccaga tcaataggaa caataacttc     300

cagacgtttc cccaggcggt gctgctgctc ttcaggtgtg caacaggtga ggcctggcag     360

gagatcatgc tggcctgtct cccagggaag ctctgtgacc ctgagtcaga ttacaacctc     420

ggggaggagt atacatgtgg gagcaacttt gccattgtct atttcatcag nttttacatg     480

ctctgtgcat ttctgacatc aatctgtttg gtggctgtca tcatggataa tttcgactat     540

ctgacccccng gac                                                        553


<210>    7
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<213>    pig
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<221>    partial_cDNA
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tggaatgtgt tcgacttcct gattgtcatc ggcagcatca ttgacgtcat cctcagtgag      60
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29

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atcgacgacc ccgacgagag tgcccgcatc tccagcgcct tcttccgcct gttccgggtc      120

atgaggttga tcaagctgct gagccgcgcc gagggcgtgc gcacgctgct ctggaccttc      180

atcaagtcct tccaggccct gccctacgtg gctctgctca tcgtcatgct cttcttcatc      240

tatgctgtca tcggcatgca gatgtttggg aagatcgcca tggtggacgg aacccagata      300

aaccggaaca acaatttcca gaccttccct caggctgtgc tgctgctctt caggtgcgcc      360

acgggtgagg cgtggcagga gatcctgctg gcctgcaggt acgggcagct gtgcgacccc      420

gagtcagact acctccctgg ggaggagtat acctgcggca ccgacttcgc ctactactac      480

ttcatcagct tctacatg                                                     498
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<211> 573
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<213> pig
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<222> (1)..(573)
<223> n is dATP, dCTP, dGTP, or dTTP
      Xaa is any amino acid

<220>
<221> misc_feature
<222> (1)..(573)
<223> n is dATP, dCTP, dGTP, or dTTP
<400> 8

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ggccctcagc tcctcgttgg cctgctcaaa gttaccttcc gtcttgatct tgagtgccgt      120

tcggaccagg gcgaagaggg tggcattgaa ggtgaccgag ccatcgctat tcaggggcat      180

gttcatgccc accagccgct tacatgccac ccggtgtgga caaaatttcc caaagcccag      240

aggggggctgg atccttctca gcagggtcac cacgtccagg tgcttgattc tgcccttagc      300

ttctgggtcg tactctgccc agatggcctt gaactcgtcc aggtgatgtg ggcccaggat      360

ggaccagtcc cgggtgaggt agtcaaaatt gtccatgatc acagccacaa agaggttgat      420

gatcaggaag gcacagagca tgtagaagct gatgaagtag tagtaggcga agtcggtgcc      480

cgcaggtata ctcctcccca gggaggtagt ctgactcggg gtcgcacagc ttgccgtacc      540

tgcaggccan caggatctcc tgcacgcctt acc                                   573
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<213> Homo sapiens
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<221> gene
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<223> n is dATP, dCTP, dGTP, or dTTP

<220>
<221> CDS
<222> (2282)..(6298)
<223> n is dATP, dCTP, dGTP, or dTTP
      Xaa is any amino acid

<220>
<221> misc_feature
<222> (2282)..(6298)
<223> n is dATP, dCTP, dGTP, or dTTP; Xaa is any amino acid
<400> 9

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aatcctcctg cccccactcc tgcccccgcc ccctggctgg ctcagcaggg caggctcagc      120
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30

```
cgacagcctc agccagccta gtccccaagg cggggggcatt ggggacacag ggaagggaaa      180

gcactggggt gggggagcag gagaaagcca gattcccagg gaagccatgg agccatcctc      240

accccaggat gaaggcctga ggaagaaaca gcccaagaag ccagttcctg agattctgcc      300

aaggccaccc cgggccttgt tctgcctgac cctggagaac cccctgagga aggcctgcat      360

cagcattgta gaatggaagc ccttcgagac gatcatcttg ctcaccatct ttgccaattg      420

tgtggccctg gccgtgtacc tgcccatgcc ggaagatgac aacaactctc tgaacctcgg      480

cctggagaag ctggagtatt tcttcctcat tgtcttctcg attgaagccg ccatgaagat      540

cattgcctac ggcttcttat tccaccagga cgcttacctg cgcagtggct ggaatgtgct      600

ggacttcacc attgtcttcc tggggggtctt caccgtgatt ctggacaagg ttaacgtcat      660

ccaaagccac acagccccat gagcagcaaa ggagccggct tggatgtcaa ggccctcaga      720

gccttccgag tgctcagacc cctccggctg gtgtcggggg tgcctagcct gcaggtggtc      780

ctgaactcca tcttcaaggc catgctcccc ctctttcaca tcgccctgct ggtcctcttt      840

atggtcatca tctatgccat catcgggctg gagctcttca agggcaagat gcacaagacc      900

tgctacttca ttggtacaga tatcgtggcc acggtggaga atgaagagcc atcgccctgc      960

gccaggacgg gctcagggcg ccggtgcacc atcaatggca gtgagtgccg gggcggctgg     1020

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taccagtgca ttaccatgga gggatggact gacgtccttt actgggtcaa tgatgccatc     1140

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ctcaacctgg tgctgggtgt cctgagtggg gaattcacca aggagcggga gaaggccaag     1260

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tacatgagct ggatcacgca gggcgaggtc atggatgttg aggacttcag agaaggaaaa     1380

ctgtctttgg atgaaggtgg ctctgacaca gagagcctgt atgaaattgc aggcttgaac     1440

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catgacatcg tgaagtccaa ggtcttctat tggctggtga ttctcatcgt tgccctcaac     1560

accctgtcta tcgcctcaga gcaccacaac cagcctctct ggctgacccg tttgcaagac     1620

attgccaacc gggtgctgct gtccctcttc accactgaga tgctgatgaa gatgtacggg     1680

ctgggcctgc gccagtactt catgtctatc ttcaaccgct tcgactgctt cgtggtgtgc     1740

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gtgctccgct gcatccgcct cctgaggatc ttcaagatca ccaaatattg gacgtcgctg     1860
agcaacctgg tggcatccct gctcaactcc atccgctcca tcgcctccct gctgctgctg     1920

ctcttcctct tcatcgtcat cttcgccctc ctgggcatgc agctctttgg ggggaggtat     1980

gactttgaag acacagaagt acggcgcagc aactttgaca actttcccca agccctcatc     2040

agcgtcttcc aggtactgac aggggaagac tggacctcaa tgatgtacaa tgggatcatg     2100

gcctacggcg ggccgtccta ccctggcatg cttgtgtgca tttacttcat catccttttc     2160

gtctgtggca actacatcct gctcaatgtc ttcctggcca ttgccgtgga caacctggcc     2220

gaggcggaga gcctgacttc tgcccagaac ggccaaggct gaggagaaaa aacgcaggaa     2280

g atg tcc aag ggt ctc cca gac aag tca gaa gag gag aag tca acg atg     2329
  Met Ser Lys Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met
  1           5               10              15
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31

```
gcc aag aag ctg gag cag aaa ccc aag ggt gag ggc atc ccc acc act        2377
Ala Lys Lys Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr
            20              25                  30

gcc aag ctg ana atc gat gag ttn gaa tct aat gtc aat gag gtg aag        2425
Ala Lys Leu Xaa Ile Asp Glu Xaa Glu Ser Asn Val Asn Glu Val Lys
            35              40                  45

gat ccc tac ccc tca gcc gac ttc cca ggg gat gac gag gaa gat gag        2473
Asp Pro Tyr Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu
            50              55                  60

cct gag atc ccg ctg agc ccc cga cca cgt ccc ctg gct gag ctg cag        2521
Pro Glu Ile Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln
65              70                  75                  80

ctg aaa gag aag gcc gtg ccc att cca gaa gcc agc tcc ttc ttc atc        2569
Leu Lys Glu Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile
                85              90                  95

ttc agc ccc acc aat aag atc cgt gtc ctg tgt cac cgc atc gtc aat        2617
Phe Ser Pro Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn
            100             105                 110

gcc acc tgg ttc acc aac ttc atc ctg ctc ttc atc ctg ctc agc agc        2665
Ala Thr Trp Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser
        115             120                 125

gct gca ctg gct gcg gaa gac ccc atc cgg gct gat tcc atg aga aat        2713
Ala Ala Leu Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn
    130             135                 140

cag atc ctt aaa cac ttt gac atc ggg ttc acc tct gtc ttc act gtg        2761
Gln Ile Leu Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val
145             150                 155                 160

gag att gtc ctc aag atg acg acc tac gga gcc ttc ctg cac aag ggt        2809
Glu Ile Val Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly
                165             170                 175

tcc ttc tgc cgc aat tac ttc aac atg ctg gac ctg ctg gtg gtg gcc        2857
Ser Phe Cys Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala
            180             185                 190

gtg tcc ctc atc tcc atg gga ctt gag tcc agt gcc atc tcc gtg gtg        2905
Val Ser Leu Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val
        195             200                 205

aag atc ctg agg gtg ctg agg gtg ctc cga cca ctc aga gcc atc aac        2953
Lys Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn
    210             215                 220

aga gcc aag ggg ttg aag gtg agn nnn nnn nnn nnn nnn nnn nnn nnn        3001
Arg Ala Lys Gly Leu Lys Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
225             230                 235                 240


nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn        3049
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            245             250                 255

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn        3097
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            260             265                 270

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn        3145
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            275             280                 285

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn        3193
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    290             295                 300
```

32

```
nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn         3241
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
305             310             315             320

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn tgc cac agg ggc tac         3289
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys His Arg Gly Tyr
                325             330             335

tac tac gtg tac aag gac ggg gac ccc atg cag ata gag ctg cgt cac         3337
Tyr Tyr Val Tyr Lys Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His
            340             345             350

cgc gag tgg gta cac agc gac ttc cac ttc gac aat gtg ctc tca gcc         3385
Arg Glu Trp Val His Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala
            355             360             365

atg atg tcc ctc ttc acg gtc tcc acc ttc gag gga tgg cct cag ctg         3433
Met Met Ser Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu
        370             375             380

ctg tac aag gcc ata gac tcc aat gcg gag gac gtg ggt ccc atc tac         3481
Leu Tyr Lys Ala Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr
385             390             395             400

aac aac cgt gtg gag atg gcc atc ttc ttc atc atc tac atc atc ctc         3529
Asn Asn Arg Val Glu Met Ala Ile Phe Phe Ile Ile Tyr Ile Ile Leu
                405             410             415

att gcc ttc ttc atg atg aac atc ttt gtg ggc ttc gtc att gtc acc         3577
Ile Ala Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr
            420             425             430

ttc cag gag cag gga gag act gag tac aag aac tgt gag ctg gac aag         3625
Phe Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys
            435             440             445

aac cag cgc caa tgt gta cag tat gcc ctg aag gcc cgc cca ctg agg         3673
Asn Gln Arg Gln Cys Val Gln Tyr Ala Leu Lys Ala Arg Pro Leu Arg
        450             455             460

tgc tac att ccc aaa aac cca tac cag tac cag gtg tgg tac att gtc         3721
Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr Ile Val
465             470             475             480

acc tcc tcc tac ttt gaa tac ctg atg ttt gcc ctc atc atg ctc aac         3769
Thr Ser Ser Tyr Phe Glu Tyr Leu Met Phe Ala Leu Ile Met Leu Asn
                485             490             495

acc atc tgc ctc ggc atg cag cac tac aac cag tcg gag cag atg aac         3817
Thr Ile Cys Leu Gly Met Gln His Tyr Asn Gln Ser Glu Gln Met Asn
            500             505             510

cac atc tca gac atc ctc aat gtg gcc ttc act atc atc ttc acc ctg         3865
His Ile Ser Asp Ile Leu Asn Val Ala Phe Thr Ile Ile Phe Thr Leu
            515             520             525

gag atg atc ctc aag ctc atg gcc ttc aag gcc agg ggc tac ttt gga         3913
Glu Met Ile Leu Lys Leu Met Ala Phe Lys Ala Arg Gly Tyr Phe Gly
            530             535             540

gac ccc tgg aat gtg ttt gac ttc ctg att gtc att ggc agc atc att         3961
Asp Pro Trp Asn Val Phe Asp Phe Leu Ile Val Ile Gly Ser Ile Ile
545             550             555             560

gat gtc atc ctc agt gag atc gac act ttc ctg gcc tcc agc ggg gga         4009
Asp Val Ile Leu Ser Glu Ile Asp Thr Phe Leu Ala Ser Ser Gly Gly
                565             570             575

ctg tat tgc ctg ggt gga ggc tgc ggg aac gtt gac cca gat gag agt         4057
Leu Tyr Cys Leu Gly Gly Gly Cys Gly Asn Val Asp Pro Asp Glu Ser
            580             585             590

gcc cgc atc tcc agc gcc ttc ttc cgc ctg ttc cgt gtc atg agg ctg         4105
Ala Arg Ile Ser Ser Ala Phe Phe Arg Leu Phe Arg Val Met Arg Leu
            595             600             605
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atc aag ctg ctg agc cgg gca gaa gga gtg cga acc ctc ctg tgg acg        4153
Ile Lys Leu Leu Ser Arg Ala Glu Gly Val Arg Thr Leu Leu Trp Thr
    610             615                 620

ttc atc aag tcc ttc cag gcc cta ccc tac gtg gct ctg ctc atc gtc        4201
Phe Ile Lys Ser Phe Gln Ala Leu Pro Tyr Val Ala Leu Leu Ile Val
625             630                 635                 640

atg ctc ttc ttc atc tac gct gtc atc ggc atg cag atg ttt ggg aag        4249
Met Leu Phe Phe Ile Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys
                645                 650                 655

atc gcc ttg gtg gat ggg acc caa ata aac cgg aac aac aac ttc cag        4297
Ile Ala Leu Val Asp Gly Thr Gln Ile Asn Arg Asn Asn Asn Phe Gln
            660                 665                 670

acc ttc cca caa gct gtg cta ctg ctc ttc agg tgt gca aca ggt gag        4345
Thr Phe Pro Gln Ala Val Leu Leu Leu Phe Arg Cys Ala Thr Gly Glu
        675                 680                 685

gcc tgg cag gag atc cta ctg gcc tgc agc tat ggg aag ctg tgt gac        4393
Ala Trp Gln Glu Ile Leu Leu Ala Cys Ser Tyr Gly Lys Leu Cys Asp
    690                 695                 700

cca gag tcg gac tat gcc cca ggg gag gag tac aca tgt ggc acc aac        4441
Pro Glu Ser Asp Tyr Ala Pro Gly Glu Glu Tyr Thr Cys Gly Thr Asn
705                 710                 715                 720

ttt gca tac tac tac ttc atc agc ttc tac atg ctc tgt gcc ttc ctg        4489
Phe Ala Tyr Tyr Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe Leu
                725                 730                 735

gtc atc aac ctc ttt gtg gct gtc atc atg gac aat ttt gac tac ctc        4537
Val Ile Asn Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu
            740                 745                 750

acc cgg gac tgg tcc atc ctg ggc cct cat cac ctg gat gag ttc aag        4585
Thr Arg Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe Lys
        755                 760                 765

gcc atc tgg gca gag tat gac cca gag gct aag ggg aga atc aaa cac        4633
Ala Ile Trp Ala Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile Lys His
    770                 775                 780

ctg gac gtg gtg acc ctg ctg aga agg att cag ccc cct ctg ggc ttt        4681
Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro Leu Gly Phe
785                 790                 795                 800

ggg aag ttc tgc cca cat cgg gta gct tgt aag cgg ctg gtg ggc atg        4729
Gly Lys Phe Cys Pro His Arg Val Ala Cys Lys Arg Leu Val Gly Met
                805                 810                 815

aac atg ccc ctg aac agc gac ggc aca gtc acc ttc aat gcc aca ctc        4777
Asn Met Pro Leu Asn Ser Asp Gly Thr Val Thr Phe Asn Ala Thr Leu
            820                 825                 830

ttt gcc ctg gtc cgc acg gca ctc aag atc aag acg gaa ggt aac ttt        4825
Phe Ala Leu Val Arg Thr Ala Leu Lys Ile Lys Thr Glu Gly Asn Phe
        835                 840                 845

gag cag gcc aac gag gag ctg agg gcc atc atc aag aag atc tgg aag        4873
Glu Gln Ala Asn Glu Glu Leu Arg Ala Ile Ile Lys Lys Ile Trp Lys
    850                 855                 860

aga acc agc atg aag ctc ttg gac cag gtc atc cct cca ata gga gat        4921
Arg Thr Ser Met Lys Leu Leu Asp Gln Val Ile Pro Pro Ile Gly Asp
865                 870                 875                 880

gat gag gtg aca gtg ggg aag ttc tac gcc aca ttc ctc atc cag gag        4969
Asp Glu Val Thr Val Gly Lys Phe Tyr Ala Thr Phe Leu Ile Gln Glu
                885                 890                 895

cac ttc cgg aag ttc atg aaa cgc caa gag gag tat tat ggc tat cgg        5017
His Phe Arg Lys Phe Met Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg
            900                 905                 910
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ccc aag aag gac att gta cag atc cag gca ggg ctg cgg acc att gag      5065
Pro Lys Lys Asp Ile Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu
        915             920             925

gaa gag gca gcc ccc gag atc tgt cgc acg gtc tca gga gac ctg gct      5113
Glu Glu Ala Ala Pro Glu Ile Cys Arg Thr Val Ser Gly Asp Leu Ala
        930             935             940

gct gag gag gag ctg gag aga gcc atg gtg gag gct gcg atg gag gag      5161
Ala Glu Glu Glu Leu Glu Arg Ala Met Val Glu Ala Ala Met Glu Glu
945             950             955             960

gga ata ttc cgg agg act gga ggc ctg ttt ggc cag gtg gac aac ttc      5209
Gly Ile Phe Arg Arg Thr Gly Gly Leu Phe Gly Gln Val Asp Asn Phe
            965             970             975

ctg gaa agg acc aac tcc ctg ccc ccc gtc atg gcc aat cag aga ccc      5257
Leu Glu Arg Thr Asn Ser Leu Pro Pro Val Met Ala Asn Gln Arg Pro
            980             985             990

ctc cag ttt gct gag ata gag atg  gaa gag atg gag tca  cct gtc ttc      5305
Leu Gln Phe Ala Glu Ile Glu Met Glu Glu Met Glu Ser Pro Val Phe
        995             1000            1005

ttg gag  gac ttc cca caa gat  cca cgc acc aac ccc  ctg gct cgt         5350
Leu Glu Asp Phe Pro Gln Asp Pro Arg Thr Asn Pro Leu Ala Arg
    1010            1015            1020

gcc aat  acc aac aat gcc aac  gcc aat gtc gcc tat  ggc aac agc         5395
Ala Asn Thr Asn Asn Ala Asn Ala Asn Val Ala Tyr Gly Asn Ser
    1025            1030            1035

aac cat  agc aac agc cat gtg  ttt tcc agt gtc cac  tat gaa agg         5440
Asn His Ser Asn Ser His Val Phe Ser Ser Val His Tyr Glu Arg
    1040            1045            1050

gag ttc  cca gaa gag aca gag  acg cct gct acc aga  gga cga gcc         5485
Glu Phe Pro Glu Glu Thr Glu Thr Pro Ala Thr Arg Gly Arg Ala
    1055            1060            1065

ctt ggc  caa ccc tgc agg gtc  cnn nnn nnn nnn nnn  nnn nnn nnn         5530
Leu Gly Gln Pro Cys Arg Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1070            1075            1080

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5575
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1085            1090            1095

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5620
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1100            1105            1110

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5665
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1115            1120            1125

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5710
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1130            1135            1140

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5755
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1145            1150            1155

nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn nnn nnn  nnn nnn nnn         5800
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    1160            1165            1170

nnn nnn  aca gga ccc cac agc  aaa ccc tgt gtg gag  atg ctg aag         5845
Xaa Xaa Thr Gly Pro His Ser Lys Pro Cys Val Glu Met Leu Lys
    1175            1180            1185

gga ctg  ctg acc cag agg gca  atg ccc aga ggc cag  gca cct cct         5890
Gly Leu Leu Thr Gln Arg Ala Met Pro Arg Gly Gln Ala Pro Pro
    1190            1195            1200
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gcc ccc  tgc cag tgc ccc agg  gtg gag tcc tcc atg  cct gag gac       5935
Ala Pro  Cys Gln Cys Pro Arg  Val Glu Ser Ser Met  Pro Glu Asp
    1205              1210              1215

aga aag  agc tcc aca cca ggg  tct ctt cat gag gag  aca ccc cac       5980
Arg Lys  Ser Ser Thr Pro Gly  Ser Leu His Glu Glu  Thr Pro His
    1220              1225              1230

agc agg  agc acc agg gag aat  act tcc agg tgc tca  gca cca gct       6025
Ser Arg  Ser Thr Arg Glu Asn  Thr Ser Arg Cys Ser  Ala Pro Ala
    1235              1240              1245

aca gcc  ctg ctg atc caa aag  gct ctg gtt cga ggg  ggc ctg ggc       6070
Thr Ala  Leu Leu Ile Gln Lys  Ala Leu Val Arg Gly  Gly Leu Gly
    1250              1255              1260

acc ttg  gca gct gat gca aac  ttc atc atg gca aca  ggc cag gcc       6115
Thr Leu  Ala Ala Asp Ala Asn  Phe Ile Met Ala Thr  Gly Gln Ala
    1265              1270              1275

ctg gca  gat gcc tgc caa atg  gaa cca gag gaa gtg  gag atc atg       6160
Leu Ala  Asp Ala Cys Gln Met  Glu Pro Glu Glu Val  Glu Ile Met
    1280              1285              1290

gca aca  gag cta ctg aaa gga  cga gag gcc cca gag  ggc atg gcc       6205
Ala Thr  Glu Leu Leu Lys Gly  Arg Glu Ala Pro Glu  Gly Met Ala
    1295              1300              1305

agc tcc  ctg gga tgc ctg aac  ctc ggg tcc tcc ctg  ggc agc ctc       6250
Ser Ser  Leu Gly Cys Leu Asn  Leu Gly Ser Ser Leu  Gly Ser Leu
    1310              1315              1320

gac caa  cac cag ggc tcc cag  gag acc ctt att cct  cca agg ctg       6295
Asp Gln  His Gln Gly Ser Gln  Glu Thr Leu Ile Pro  Pro Arg Leu
    1325              1330              1335

tga tgcccacaca gcatcagcat gggcttagag ctggcatgac caatgggggt          6348

ggggaagttg ctggggtgga gaagggctag cccaccgcag cagcctccct ccctctcagc    6408

agctagatgc atggcctgag gcagggtggt caggaaccac ctcaaaaagt gcggaggaag    6468

tagctggaca ggccctgccc ctcaccagca agaggcatga ttggatggag cttctaatgt    6528

cattcaaaaa ggcctggtca gtgcctgtct ggcctagggc cactcccacc tgcaggacat    6588

taaaatctcc aggcctgtga cactggc                                       6615
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<223> The 'Xaa' at location 36 stands for Lys, Arg, Thr, or Ile.

<220>
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<222> (40)..(40)
<223> The 'Xaa' at location 40 stands for Leu, or Phe.

<220>
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<222> (232)..(232)
<223> The 'Xaa' at location 232 stands for Arg, or Ser.

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<223> The 'Xaa' at location 233 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 235 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 238 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 239 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 243 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223> The 'Xaa' at location 254 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223> The 'Xaa' at location 258 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223> The 'Xaa' at location 262 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223> The 'Xaa' at location 263 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 265 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 271 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (272)..(272)
<223>  The 'Xaa' at location 272 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (273)..(273)
<223>  The 'Xaa' at location 273 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (274)..(274)
<223>  The 'Xaa' at location 274 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (275)..(275)
<223>  The 'Xaa' at location 275 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
<222>  (276)..(276)
<223>  The 'Xaa' at location 276 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (277)..(277)
<223>  The 'Xaa' at location 277 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 278 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (279)..(279)
<223>  The 'Xaa' at location 279 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 280 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 281 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (282)..(282)
<223>  The 'Xaa' at location 282 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
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<223>  The 'Xaa' at location 283 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 284 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 285 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (286)..(286)
<223>  The 'Xaa' at location 286 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>   The 'Xaa' at location 287 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>   The 'Xaa' at location 288 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>   The 'Xaa' at location 289 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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        Tyr, Trp, Cys, or Phe.


<220>
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<223>   The 'Xaa' at location 290 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>   (291)..(291)
<223>   The 'Xaa' at location 291 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>   The 'Xaa' at location 292 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>   (293)..(293)
<223>   The 'Xaa' at location 293 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>   The 'Xaa' at location 294 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>   (295)..(295)
<223>   The 'Xaa' at location 295 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>   (296)..(296)
<223>   The 'Xaa' at location 296 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>   (297)..(297)
<223>   The 'Xaa' at location 297 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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        Tyr, Trp, Cys, or Phe.
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<220>
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<222>  (298)..(298)
<223>  The 'Xaa' at location 298 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (299)..(299)
<223>  The 'Xaa' at location 299 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 300 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (301)..(301)
<223>  The 'Xaa' at location 301 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 302 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 303 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (304)..(304)
<223>  The 'Xaa' at location 304 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (305)..(305)
<223>  The 'Xaa' at location 305 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (306)..(306)
<223>  The 'Xaa' at location 306 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (307)..(307)
<223>  The 'Xaa' at location 307 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (308)..(308)
<223>  The 'Xaa' at location 308 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
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<222>  (309)..(309)
<223>  The 'Xaa' at location 309 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
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<223>  The 'Xaa' at location 310 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (311)..(311)
<223>  The 'Xaa' at location 311 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>  (312)..(312)
<223>  The 'Xaa' at location 312 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 313 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (314)..(314)
<223>  The 'Xaa' at location 314 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (315)..(315)
<223>  The 'Xaa' at location 315 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 316 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (317)..(317)
<223>  The 'Xaa' at location 317 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
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<222>  (318)..(318)
<223>  The 'Xaa' at location 318 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (319)..(319)
<223>  The 'Xaa' at location 319 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
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<223>  The 'Xaa' at location 320 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (321)..(321)
<223>  The 'Xaa' at location 321 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (322)..(322)
<223>  The 'Xaa' at location 322 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
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<223>  The 'Xaa' at location 323 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 324 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (325)..(325)
<223>  The 'Xaa' at location 325 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (326)..(326)
<223>  The 'Xaa' at location 326 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 327 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (328)..(328)
<223>  The 'Xaa' at location 328 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (329)..(329)
<223>  The 'Xaa' at location 329 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (330)..(330)
<223>  The 'Xaa' at location 330 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
<222>  (331)..(331)
<223>  The 'Xaa' at location 331 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1076)..(1076)
<223>  The 'Xaa' at location 1076 stands for Gln, His, Arg, Pro, or Leu.


<220>
<221>  misc_feature
<222>  (1077)..(1077)
<223>  The 'Xaa' at location 1077 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 1078 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 1079 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1080)..(1080)
<223>  The 'Xaa' at location 1080 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1081)..(1081)
<223>  The 'Xaa' at location 1081 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 1082 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1083)..(1083)
<223>  The 'Xaa' at location 1083 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
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<222>  (1084)..(1084)
<223>  The 'Xaa' at location 1084 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1085)..(1085)
<223>  The 'Xaa' at location 1085 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
<222>  (1086)..(1086)
<223>  The 'Xaa' at location 1086 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1087)..(1087)
<223>  The 'Xaa' at location 1087 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1088)..(1088)
<223>  The 'Xaa' at location 1088 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
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<222>  (1089)..(1089)
<223>  The 'Xaa' at location 1089 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1090)..(1090)
<223>  The 'Xaa' at location 1090 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1091)..(1091)
<223>  The 'Xaa' at location 1091 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1092)..(1092)
<223>  The 'Xaa' at location 1092 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
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<222>  (1093)..(1093)
<223>  The 'Xaa' at location 1093 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1094)..(1094)
<223>  The 'Xaa' at location 1094 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1095)..(1095)
<223>  The 'Xaa' at location 1095 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (1096)..(1096)
<223>  The 'Xaa' at location 1096 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
<222>  (1097)..(1097)
<223>  The 'Xaa' at location 1097 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1098)..(1098)
<223>  The 'Xaa' at location 1098 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1099)..(1099)
<223>  The 'Xaa' at location 1099 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1100)..(1100)
<223>  The 'Xaa' at location 1100 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1101)..(1101)
<223>  The 'Xaa' at location 1101 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1102)..(1102)
<223>  The 'Xaa' at location 1102 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1103)..(1103)
<223>  The 'Xaa' at location 1103 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1104)..(1104)
<223>  The 'Xaa' at location 1104 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1105)..(1105)
<223>  The 'Xaa' at location 1105 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (1106)..(1106)
<223>  The 'Xaa' at location 1106 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (1107)..(1107)
<223>  The 'Xaa' at location 1107 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
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<223>  The 'Xaa' at location 1108 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1109)..(1109)
<223>  The 'Xaa' at location 1109 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1110)..(1110)
<223>  The 'Xaa' at location 1110 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr,, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1111)..(1111)
<223>  The 'Xaa' at location 1111 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1112)..(1112)
<223>  The 'Xaa' at location 1112 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1113)..(1113)
<223>  The 'Xaa' at location 1113 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1114)..(1114)
<223>  The 'Xaa' at location 1114 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1115)..(1115)
<223>  The 'Xaa' at location 1115 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1116)..(1116)
<223>  The 'Xaa' at location 1116 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.

<220>
<221>  misc_feature
<222>  (1117)..(1117)
<223>  The 'Xaa' at location 1117 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (1118)..(1118)
<223>  The 'Xaa' at location 1118 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
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<222>  (1119)..(1119)
<223>  The 'Xaa' at location 1119 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
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<222>  (1120)..(1120)
<223>  The 'Xaa' at location 1120 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1121)..(1121)
<223>  The 'Xaa' at location 1121 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1122)..(1122)
<223>  The 'Xaa' at location 1122 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1123)..(1123)
<223>  The 'Xaa' at location 1123 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (1124)..(1124)
<223>  The 'Xaa' at location 1124 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1125)..(1125)
<223>  The 'Xaa' at location 1125 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1126)..(1126)
<223>  The 'Xaa' at location 1126 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1127)..(1127)
<223>  The 'Xaa' at location 1127 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1128)..(1128)
<223>  The 'Xaa' at location 1128 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (1129)..(1129)
<223>  The 'Xaa' at location 1129 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.
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<220>
<221> misc_feature
<222> (1130)..(1130)
<223> The 'Xaa' at location 1130 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1131)..(1131)
<223> The 'Xaa' at location 1131 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1132)..(1132)
<223> The 'Xaa' at location 1132 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1133)..(1133)
<223> The 'Xaa' at location 1133 stands for Lys, Asn, Arg, Ser, Thr, Ile,
      Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1134)..(1134)
<223> The 'Xaa' at location 1134 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1135)..(1135)
<223> The 'Xaa' at location 1135 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
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<222> (1136)..(1136)
<223> The 'Xaa' at location 1136 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1137)..(1137)
<223> The 'Xaa' at location 1137 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1138)..(1138)
<223> The 'Xaa' at location 1138 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1139)..(1139)
<223> The 'Xaa' at location 1139 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222> (1140)..(1140)
<223> The 'Xaa' at location 1140 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

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<220>
<221>  misc_feature
<222>  (1141)..(1141)
<223>  The 'Xaa' at location 1141 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1142)..(1142)
<223>  The 'Xaa' at location 1142 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1143)..(1143)
<223>  The 'Xaa' at location 1143 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1144)..(1144)
<223>  The 'Xaa' at location 1144 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1145)..(1145)
<223>  The 'Xaa' at location 1145 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1146)..(1146)
<223>  The 'Xaa' at location 1146 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1147)..(1147)
<223>  The 'Xaa' at location 1147 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1148)..(1148)
<223>  The 'Xaa' at location 1148 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1149)..(1149)
<223>  The 'Xaa' at location 1149 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1150)..(1150)
<223>  The 'Xaa' at location 1150 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (1151)..(1151)
<223>  The 'Xaa' at location 1151 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
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<223>  The 'Xaa' at location 1152 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1153)..(1153)
<223>  The 'Xaa' at location 1153 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1154)..(1154)
<223>  The 'Xaa' at location 1154 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1155)..(1155)
<223>  The 'Xaa' at location 1155 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
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<222>  (1156)..(1156)
<223>  The 'Xaa' at location 1156 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
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<222>  (1157)..(1157)
<223>  The 'Xaa' at location 1157 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1158)..(1158)
<223>  The 'Xaa' at location 1158 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1159)..(1159)
<223>  The 'Xaa' at location 1159 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1160)..(1160)
<223>  The 'Xaa' at location 1160 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1161)..(1161)
<223>  The 'Xaa' at location 1161 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (1162)..(1162)
<223>  The 'Xaa' at location 1162 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221>  misc_feature
<222>  (1163)..(1163)
<223>  The 'Xaa' at location 1163 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1164)..(1164)
<223>  The 'Xaa' at location 1164 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1165)..(1165)
<223>  The 'Xaa' at location 1165 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1166)..(1166)
<223>  The 'Xaa' at location 1166 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
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<222>  (1167)..(1167)
<223>  The 'Xaa' at location 1167 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1168)..(1168)
<223>  The 'Xaa' at location 1168 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1169)..(1169)
<223>  The 'Xaa' at location 1169 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1170)..(1170)
<223>  The 'Xaa' at location 1170 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1171)..(1171)
<223>  The 'Xaa' at location 1171 stands for Lys, Asn, Arg, Ser, Thr, Ile,
       Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
       Tyr, Trp, Cys, or Phe.


<220>
<221>  misc_feature
<222>  (1172)..(1172)
<223>  The 'Xaa' at location 1172 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
<220>
<221>  misc_feature
<222>  (1173)..(1173)
<223>  The 'Xaa' at location 1173 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
<221> misc_feature
<222> (1174)..(1174)
<223> The 'Xaa' at location 1174 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (1175)..(1175)
<223> The 'Xaa' at location 1175 stands for Lys, Asn, Arg, Ser, Thr, Ile,
      Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
      Tyr, Trp, Cys, or Phe.

<220>
<221> misc_feature
<222> (2282)..(6298)
<223> n is dATP, dCTP, dGTP, or dTTP; Xaa is any amino acid
<400> 10

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Met Ser Lys Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met
1               5                   10                  15

Ala Lys Lys Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr
            20              25              30

Ala Lys Leu Xaa Ile Asp Glu Xaa Glu Ser Asn Val Asn Glu Val Lys
        35              40              45

Asp Pro Tyr Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu
    50              55              60

Pro Glu Ile Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln
65              70              75              80

Leu Lys Glu Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile
            85              90              95

Phe Ser Pro Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn
            100             105             110

Ala Thr Trp Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser
        115             120             125

Ala Ala Leu Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn
    130             135             140

Gln Ile Leu Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val
145             150             155             160

Glu Ile Val Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly
            165             170             175

Ser Phe Cys Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala
            180             185             190

Val Ser Leu Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val
    195             200             205

Lys Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn
    210             215             220
```

Arg Ala Lys Gly Leu Lys Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
225   230   235   240

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
              245   250   255

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
              260   265   270

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
              275   280   285

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
              290   295   300

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
305   310   315   320

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys His Arg Gly Tyr
              325   330   335

Tyr Tyr Val Tyr Lys Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His
              340   345   350

Arg Glu Trp Val His Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala
              355   360   365

Met Met Ser Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu
              370   375   380

Leu Tyr Lys Ala Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr
385   390   395   400

Asn Asn Arg Val Glu Met Ala Ile Phe Phe Ile Ile Tyr Ile Ile Leu
              405   410   415

Ile Ala Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr
              420   425   430

Phe Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys
              435   440   445

Asn Gln Arg Gln Cys Val Gln Tyr Ala Leu Lys Ala Arg Pro Leu Arg
              450   455   460

Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr Ile Val
465   470   475   480

Thr Ser Ser Tyr Phe Glu Tyr Leu Met Phe Ala Leu Ile Met Leu Asn
              485   490   495

Thr Ile Cys Leu Gly Met Gln His Tyr Asn Gln Ser Glu Gln Met Asn
              500   505   510

His Ile Ser Asp Ile Leu Asn Val Ala Phe Thr Ile Ile Phe Thr Leu
              515   520   525

56

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Glu Met Ile Leu Lys Leu Met Ala Phe Lys Ala Arg Gly Tyr Phe Gly
    530             535             540

Asp Pro Trp Asn Val Phe Asp Phe Leu Ile Val Ile Gly Ser Ile Ile
545             550             555             560

Asp Val Ile Leu Ser Glu Ile Asp Thr Phe Leu Ala Ser Ser Gly Gly
            565             570             575

Leu Tyr Cys Leu Gly Gly Gly Cys Gly Asn Val Asp Pro Asp Glu Ser
        580             585             590

Ala Arg Ile Ser Ser Ala Phe Phe Arg Leu Phe Arg Val Met Arg Leu
    595             600             605

Ile Lys Leu Leu Ser Arg Ala Glu Gly Val Arg Thr Leu Leu Trp Thr
    610             615             620

Phe Ile Lys Ser Phe Gln Ala Leu Pro Tyr Val Ala Leu Leu Ile Val
625             630             635             640

Met Leu Phe Phe Ile Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys
            645             650             655

Ile Ala Leu Val Asp Gly Thr Gln Ile Asn Arg Asn Asn Asn Phe Gln
            660             665             670

Thr Phe Pro Gln Ala Val Leu Leu Leu Phe Arg Cys Ala Thr Gly Glu
        675             680             685

Ala Trp Gln Glu Ile Leu Leu Ala Cys Ser Tyr Gly Lys Leu Cys Asp
    690             695             700

Pro Glu Ser Asp Tyr Ala Pro Gly Glu Glu Tyr Thr Cys Gly Thr Asn
705             710             715             720

Phe Ala Tyr Tyr Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe Leu
            725             730             735

Val Ile Asn Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu
            740             745             750

Thr Arg Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe Lys
        755             760             765

Ala Ile Trp Ala Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile Lys His
    770             775             780

Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro Leu Gly Phe
785             790             795             800

Gly Lys Phe Cys Pro His Arg Val Ala Cys Lys Arg Leu Val Gly Met
            805             810             815

Asn Met Pro Leu Asn Ser Asp Gly Thr Val Thr Phe Asn Ala Thr Leu
        820             825             830
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57

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Phe Ala Leu Val Arg Thr Ala Leu Lys Ile Lys Thr Glu Gly Asn Phe
        835                 840                 845

Glu Gln Ala Asn Glu Glu Leu Arg Ala Ile Ile Lys Lys Ile Trp Lys
        850                 855                 860

Arg Thr Ser Met Lys Leu Leu Asp Gln Val Ile Pro Pro Ile Gly Asp
865                 870                 875                 880

Asp Glu Val Thr Val Gly Lys Phe Tyr Ala Thr Phe Leu Ile Gln Glu
                885                 890                 895

His Phe Arg Lys Phe Met Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg
                900                 905                 910

Pro Lys Lys Asp Ile Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu
            915                 920                 925

Glu Glu Ala Ala Pro Glu Ile Cys Arg Thr Val Ser Gly Asp Leu Ala
        930                 935                 940

Ala Glu Glu Glu Leu Glu Arg Ala Met Val Glu Ala Ala Met Glu Glu
945                 950                 955                 960

Gly Ile Phe Arg Arg Thr Gly Gly Leu Phe Gly Gln Val Asp Asn Phe
                965                 970                 975

Leu Glu Arg Thr Asn Ser Leu Pro Pro Val Met Ala Asn Gln Arg Pro
            980                 985                 990

Leu Gln Phe Ala Glu Ile Glu Met  Glu Glu Met Glu Ser  Pro Val Phe
        995                 1000                1005

Leu Glu  Asp Phe Pro Gln Asp  Pro Arg Thr Asn Pro  Leu Ala Arg
    1010                1015                1020

Ala Asn  Thr Asn Asn Ala Asn  Ala Asn Val Ala Tyr  Gly Asn Ser
    1025                1030                1035

Asn His  Ser Asn Ser His Val  Phe Ser Ser Val His  Tyr Glu Arg
    1040                1045                1050

Glu Phe  Pro Glu Glu Thr Glu  Thr Pro Ala Thr Arg  Gly Arg Ala
    1055                1060                1065

Leu Gly  Gln Pro Cys Arg Val  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1070                1075                1080

Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1085                1090                1095

Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1100                1105                1110

Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1115                1120                1125
```

```
Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1130             1135                 1140

Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1145             1150                 1155

Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa Xaa Xaa  Xaa Xaa Xaa
    1160             1165                 1170

Xaa Xaa  Thr Gly Pro His Ser  Lys Pro Cys Val Glu  Met Leu Lys
    1175             1180                 1185

Gly Leu  Leu Thr Gln Arg Ala  Met Pro Arg Gly Gln  Ala Pro Pro
    1190             1195                 1200

Ala Pro  Cys Gln Cys Pro Arg  Val Glu Ser Ser Met  Pro Glu Asp
    1205             1210                 1215

Arg Lys  Ser Ser Thr Pro Gly  Ser Leu His Glu Glu  Thr Pro His
    1220             1225                 1230

Ser Arg  Ser Thr Arg Glu Asn  Thr Ser Arg Cys Ser  Ala Pro Ala
    1235             1240                 1245

Thr Ala  Leu Leu Ile Gln Lys  Ala Leu Val Arg Gly  Gly Leu Gly
    1250             1255                 1260

Thr Leu  Ala Ala Asp Ala Asn  Phe Ile Met Ala Thr  Gly Gln Ala
    1265             1270                 1275

Leu Ala  Asp Ala Cys Gln Met  Glu Pro Glu Glu Val  Glu Ile Met
    1280             1285                 1290

Ala Thr  Glu Leu Leu Lys Gly  Arg Glu Ala Pro Glu  Gly Met Ala
    1295             1300                 1305

Ser Ser  Leu Gly Cys Leu Asn  Leu Gly Ser Ser Leu  Gly Ser Leu
    1310             1315                 1320

Asp Gln  His Gln Gly Ser Gln  Glu Thr Leu Ile Pro  Pro Arg Leu
    1325             1330                 1335


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<212>   DNA
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tcaggccggc agcggggagc cgagtggagg ctaattttac ttgctgggag cgaggagagt      60

aatcctcctg ccccccactc ctgccccgcc ccctggctgg ctcagcaggg cagctcagcc     120

gacagcctca gccagcctag tccccaaggc gggggcattg gggacacagg gaagggaaag     180
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59

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cactggggtg ggggagcagg agaaagccag attcccaggg aagcc atg gag cca tcc       237
                                                      Met Glu Pro Ser
                                                       1

tca ccc cag gat gaa ggc ctg agg aag aaa cag ccc aag aag cca gtt          285
Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro Lys Lys Pro Val
 5               10                  15                  20

cct gag att ctg cca agg cca ccc cgg gct ttg ttc tgc ctg acc ctg          333
Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe Cys Leu Thr Leu
                 25                  30                  35

gag aac ccc ctg agg aag gcc tgc atc agc att gta gaa tgg aag ccc          381
Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val Glu Trp Lys Pro
             40                  45                  50

ttc gag acg atc atc ttg ctc acc atc ttt gcc aat tgt gtg gcc ctg          429
Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn Cys Val Ala Leu
             55                  60                  65

gcc gtg tac ctg ccc atg ccg gaa gat gac aac aac tct ctg aac ctc          477
Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn Ser Leu Asn Leu
     70                  75                  80

ggc ctg gag aag ctg gag tat ttc ttc ctc att gtc ttc tcg att gaa          525
Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val Phe Ser Ile Glu
 85                  90                  95                 100

gcc gcc atg aag atc att gcc tac ggc ttc tta ttc cac cag gac gct          573
Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe His Gln Asp Ala
                 105                 110                 115

tac ctg cgc agt ggc tgg aat gtg ctg gac ttc acc att gtc ttc ctg          621
Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr Ile Val Phe Leu
             120                 125                 130

ggg gtc ttc acc gtg att ctg gaa cag gtt aac gtc atc caa agc cac          669
Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val Ile Gln Ser His
             135                 140                 145

aca gcc cca atg agc agc aaa gga gcc ggc ttg gat gtc aag gcc ctc          717
Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp Val Lys Ala Leu
     150                 155                 160

aga gcc ttc cga gtg ctc aga ccc ctc cgg ctg gtg tcg ggg gtg cct          765
Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro
165                 170                 175                 180

agc ctg cag gtg gtc ctg aac tcc atc ttc aag gcc atg ctc ccc ctc          813
Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala Met Leu Pro Leu
             185                 190                 195

ttt cac atc gcc ctg ctg gtc ctc ttt atg gtc atc atc tat gcc atc          861
Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile Ile Tyr Ala Ile
             200                 205                 210

atc ggg ctg gag ctc ttc aag ggc aag atg cac aag acc tgc tac ttc          909
Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys Thr Cys Tyr Phe
             215                 220                 225

att ggt aca gat atc gtg gcc acg gtg gag aat gaa gag cca tcg ccc          957
Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu Glu Pro Ser Pro
         230                 235                 240


tgc gcc agg acg ggc tca ggg cgc cgg tgc acc atc aat ggc agt gag         1005
Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile Asn Gly Ser Glu
245                 250                 255                 260

tgc cgg ggc ggc tgc cca ggg ccc aac cat ggc atc acc cac ttc gac         1053
Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile Thr His Phe Asp
                 265                 270                 275
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60

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aac ttc ggc ttc tcc atg ctc acc gtg tac cag tgc att acc atg gag      1101
Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys Ile Thr Met Glu
            280                     285                 290

gga tgg act gac gtc ctt tac tgg gtc aat gat gcc atc ggg aat gag      1149
Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Asn Glu
            295                     300                 305

tgg ccc tgg atc tat ttt gtc acc ctc att ttg ctg gga tcc ttc ttc      1197
Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu Gly Ser Phe Phe
            310                     315                 320

atc ctc aac ctg gtg ctg ggt gtc ctg agt ggg gaa ttc acc aag gag      1245
Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu Phe Thr Lys Glu
325                     330                 335                 340

cgg gag aag gcc aag tcc agg gga acc ttc cag aag ctc cgg gag aag      1293
Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys Leu Arg Glu Lys
                345                     350                 355

cag caa cta gat gag gac ctt cgg ggc tac atg agc tgg atc acg cag      1341
Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser Trp Ile Thr Gln
            360                     365                 370

ggc gag gtc atg gat gtt gag gac ttc aga gaa gga aaa ctg tct ttg      1389
Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly Lys Leu Ser Leu
            375                     380                 385

gat gaa ggt ggc tct gac aca gag agc ctg tat gaa att gca ggc ttg      1437
Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu Ile Ala Gly Leu
            390                     395                 400

aac aaa atc atc cag ttc atc cga cat tgg agg cag tgg aac cgc atc      1485
Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln Trp Asn Arg Ile
405                     410                 415                 420

ttt cgc tgg aag tgc cat gac atc gtg aag tcc aag gtc ttc tat tgg      1533
Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys Val Phe Tyr Trp
                425                     430                 435

ctg gtg att ctc atc gtt gcc ctc aac acc ctg tct atc gcc tca gag      1581
Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser Ile Ala Ser Glu
                440                     445                 450

cac cac aac cag ccg cac tgg ctg acc cgt ttg caa gac att gcc aac      1629
His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln Asp Ile Ala Asn
                455                     460                 465

cgg gtg ctg ctg tcc ctc ttc acc act gag atg ctg atg aag atg tac      1677
Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu Met Lys Met Tyr
            470                     475                 480

ggg ctg ggc ctg cgc cag tac ttc atg tct atc ttc aac cgc ttc gac      1725
Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe Asn Arg Phe Asp
485                     490                     495                 500

tgc ttc gtg gtg tgc agc ggt atc ctg gag atc ctg ctg gtg gag tcg      1773
Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu Leu Val Glu Ser
                505                     510                 515

ggc gcc atg aca ccc ctg ggc atc tcc gtg ctc cgc tgc atc cgc ctc      1821
Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg Cys Ile Arg Leu
            520                     525                 530

ctg agg atc ttc aag atc acc aaa tat tgg acg tcg ctg agc aac ctg      1869
Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser Leu Ser Asn Leu
            535                     540                 545

gtg gca tcc ctg ctc aac tcc atc cgc tcc atc gcc tcc ctg ctg ctg      1917
Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala Ser Leu Leu Leu
            550                     555                 560

ctg ctc ttc ctc ttc atc gtc atc ttc cgc ctc ctg ggc atg cag ctc      1965
Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu Gly Met Gln Leu
565                     570                 575                 580
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61

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ttt ggg ggg agg tat gac ttt gaa gac aca gaa gta cgg cgc agc aac       2013
Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val Arg Arg Ser Asn
                585                 590                 595

ttt gac aac ttt ccc caa gcc ctc atc agc gtc ttc cag gta ctg aca       2061
Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe Gln Val Leu Thr
                600                 605                 610

ggg gaa gac tgg acc tca atg atg tac aat ggg atc atg gcc tcg agc       2109
Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile Met Ala Ser Ser
                615                 620                 625

ggg ccg tcc tac cct ggc atg ctt gtg tgc att tac ttc atc atc ctt       2157
Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr Phe Ile Ile Leu
                630                 635                 640

ttc gtc tgt ggc aac tac atc ctg ctc aat gtc ttc ctg gcc att gcc       2205
Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala Ile Ala
645                 650                 655                 660

gtg gac aac ctg gcc gag gcg gag agc ctg act tct gcc cag aag gcc       2253
Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser Ala Gln Lys Ala
                665                 670                 675

aag gct gag gag aaa aaa cgc agg aag atg tcc aag ggt ctc cca gac       2301
Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys Gly Leu Pro Asp
                680                 685                 690

aag tca gaa gag gag aag tca acg atg gcc aag aag ctg gag cag aaa       2349
Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys Leu Glu Gln Lys
                695                 700                 705

ccc aag ggt gag ggc atc ccc acc act gcc aag ctg aaa atc gat gag       2397
Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu Lys Ile Asp Glu
                710                 715                 720

ttt gaa tct aat gtc aat gag gtg aag gat ccc tac ccc tca gcc gac       2445
Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr Pro Ser Ala Asp
725                 730                 735                 740

ttc cca ggg gat gac gag gaa gat gag cct gag atc ccg ctg agc ccc       2493
Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile Pro Leu Ser Pro
                745                 750                 755

cga cca cgt ccc ctg gct gag ctg cag ctg aaa gag aag gcc gtg ccc       2541
Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu Lys Ala Val Pro
                760                 765                 770

att cca gaa gcc agc tcc ttc ttc atc ttc agc ccc acc aat aag atc       2589
Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro Thr Asn Lys Ile
                775                 780                 785

cgt gtc ctg tgt cac cgc atc gtc aat gcc acc tgg ttc acc aac ttc       2637
Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp Phe Thr Asn Phe
                790                 795                 800

atc ctg ctc ttc atc ctg ctc agc agc gct gca ctg gct gcg gaa gac       2685
Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp
805                 810                 815                 820

ccc atc cgg gct gat tcc atg aga aat cag atc ctt aaa cac ttt gac       2733
Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu Lys His Phe Asp
                825                 830                 835

atc ggg ttc acc tct gtc ttc act gtg gag att gtc ctc aag atg acg       2781
Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val Leu Lys Met Thr
                840                 845                 850

acc tac gga gcc ttc ctg cac aag ggt tcc ttc tgc cgc aat tac ttc       2829
Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys Arg Asn Tyr Phe
                855                 860                 865

aac atg ctg gac ctg ctg gtg gtg gcc gtg tcc ctc atc tcc atg gga       2877
Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu Ile Ser Met Gly
                870                 875                 880
```

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ctt gag tcc agt gcc atc tcc gtg gtg aag atc ctg agg gtg ctg agg        2925
Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg
885                 890                 895                 900

gtg ctc cga cca ctc aga gcc atc aac aga gcc aag ggg ttg aag cac        2973
Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys Gly Leu Lys His
                905                 910                 915

gtg gct agg tgc atg ttc gtg gcc atc agc acc atc ggg aac atc gtg        3021
Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile Gly Asn Ile Val
                920                 925                 930

ctg gtc act acc ctc cta cag ttc atg ttt gcc tgc atc ggc gtc cag        3069
Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys Ile Gly Val Gln
                935                 940                 945

ctc ttc aag ggg aag ttc ttc agg tgc acc gac ttg tcc aag atg aca        3117
Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu Ser Lys Met Thr
        950                 955                 960

gag gag gag tgc agg ggc tac tac tac gtg tac aag gac ggg gac ccc        3165
Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys Asp Gly Asp Pro
965                 970                 975                 980

atg cag ata gag ctg cgt cac cgc gag tgg gta cac agc gac ttc cac        3213
Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His Ser Asp Phe His
                985                 990                 995

ttc gac aat gtg  ctc tca gcc atg atg  tcc ctc ttc acg gtc  tcc        3258
Phe Asp Asn Val Leu Ser Ala Met Met Ser Leu Phe Thr Val  Ser
            1000                1005                1010

acc ttc gag gga  tgg cct cag ctg ctg  tac aag gcc ata gac  tcc        3303
Thr Phe Glu Gly Trp Pro Gln Leu Leu  Tyr Lys Ala Ile Asp  Ser
            1015                1020                1025

aat gcg gag gac  gtg ggt ccc atc tac  aac aac cgt gtg gag  atg        3348
Asn Ala Glu Asp Val Gly Pro Ile Tyr  Asn Asn Arg Val Glu  Met
            1030                1035                1040

gcc atc ttc ttc  atc atc tac atc atc  ctc att gcc ttc ttc  atg        3393
Ala Ile Phe Phe Ile Ile Tyr Ile Ile  Leu Ile Ala Phe Phe  Met
            1045                1050                1055

atg aac atc ttt  gtg ggc ttc gtc att  gtc acc ttc cag gag  cag        3438
Met Asn Ile Phe Val Gly Phe Val Ile  Val Thr Phe Gln Glu  Gln
            1060                1065                1070

gga gag act gag  tac aag aac tgt gag  ctg gac aag aac cag  cgc        3483
Gly Glu Thr Glu Tyr Lys Asn Cys Glu  Leu Asp Lys Asn Gln  Arg
            1075                1080                1085

caa tgt gta cag  tat gcc ctg aag gcc  cgc cca ctg agg tgc  tac        3528
Gln Cys Val Gln Tyr Ala Leu Lys Ala  Arg Pro Leu Arg Cys  Tyr
            1090                1095                1100

att ccc aaa aac  cca tac cag tac cag  gtg tgg tac att gtc  acc        3573
Ile Pro Lys Asn Pro Tyr Gln Tyr Gln  Val Trp Tyr Ile Val  Thr
            1105                1110                1115

tcc tcc tac ttt  gaa tac ctg atg ttt  gcc ctc atc atg ctc  aac        3618
Ser Ser Tyr Phe Glu Tyr Leu Met Phe  Ala Leu Ile Met Leu  Asn
            1120                1125                1130

acc atc tgc ctc  ggc atg cag cac tac  aac cag tcg gag cag  atg        3663
Thr Ile Cys Leu Gly Met Gln His Tyr  Asn Gln Ser Glu Gln  Met
            1135                1140                1145

aac cac atc tca  gac atc ctc aat gtg  gcc ttc act atc atc  ttc        3708
Asn His Ile Ser Asp Ile Leu Asn Val  Ala Phe Thr Ile Ile  Phe
            1150                1155                1160

acc ctg gag atg  atc ctc aag ctc atg  gcc ttc aag gcc agg  ggc        3753
Thr Leu Glu Met Ile Leu Lys Leu Met  Ala Phe Lys Ala Arg  Gly
            1165                1170                1175
```

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tac ttt gga aac   ccc tgg aat gtg ttt   gac ttc ctg att gtc   att        3798
Tyr Phe Gly Asn   Pro Trp Asn Val Phe   Asp Phe Leu Ile Val   Ile
        1180               1185                   1190

ggc agc atc att   gat gtc atc ctc agt   gag atc gac act ttc   ctg        3843
Gly Ser Ile Ile   Asp Val Ile Leu Ser   Glu Ile Asp Thr Phe   Leu
        1195               1200                   1205

gcc tcc agc ggg   gga ctg tat tgc ctg   ggt gga ggc tgc ggg   aac        3888
Ala Ser Ser Gly   Gly Leu Tyr Cys Leu   Gly Gly Gly Cys Gly   Asn
        1210               1215                   1220

gtt gac cca gat   gag agt gcc cgc atc   tcc agc gcc ttc ttc   cgc        3933
Val Asp Pro Asp   Glu Ser Ala Arg Ile   Ser Ser Ala Phe Phe   Arg
        1225               1230                   1235

ctg ttc cgt gtc   atg agg ctg atc aag   ctg ctg agc cgg gca   gaa        3978
Leu Phe Arg Val   Met Arg Leu Ile Lys   Leu Leu Ser Arg Ala   Glu
        1240               1245                   1250

gga gtg cga acc   ctc ctg tgg acg ttc   atc aag tcc ttc cag   gcc        4023
Gly Val Arg Thr   Leu Leu Trp Thr Phe   Ile Lys Ser Phe Gln   Ala
        1255               1260                   1265

cta ccc tac gtg   gct ctg ctc atc gtc   atg ctc ttc ttc atc   tac        4068
Leu Pro Tyr Val   Ala Leu Leu Ile Val   Met Leu Phe Phe Ile   Tyr
        1270               1275                   1280

gct gtc atc ggc   atg cag atg ttt ggg   aag atc gcc ttg gtg   gat        4113
Ala Val Ile Gly   Met Gln Met Phe Gly   Lys Ile Ala Leu Val   Asp
        1285               1290                   1295

ggg acc caa ata   aac cgg aac aac aac   ttc cag acc ttc cca   caa        4158
Gly Thr Gln Ile   Asn Arg Asn Asn Asn   Phe Gln Thr Phe Pro   Gln
        1300               1305                   1310

gct gtg cta ctg   ctc ttc agg tgt gca   aca ggt gag gcc tgg   cag        4203
Ala Val Leu Leu   Leu Phe Arg Cys Ala   Thr Gly Glu Ala Trp   Gln
        1315               1320                   1325

gag atc cta ctg   gcc tgc agc tat ggg   aag ctg tgt gac cca   gag        4248
Glu Ile Leu Leu   Ala Cys Ser Tyr Gly   Lys Leu Cys Asp Pro   Glu
        1330               1335                   1340

tcg gac tat gcc   cca ggg gag gag tac   aca tgt ggc acc aac   ttt        4293
Ser Asp Tyr Ala   Pro Gly Glu Glu Tyr   Thr Cys Gly Thr Asn   Phe
        1345               1350                   1355

gca tac tac tac   ttc atc agc ttc tac   atg ctc tgt gcc ttc   ctg        4338
Ala Tyr Tyr Tyr   Phe Ile Ser Phe Tyr   Met Leu Cys Ala Phe   Leu
        1360               1365                   1370

gtc atc aac ctc   ttt gtg gct gtc atc   atg gac aat ttt gac   tac        4383
Val Ile Asn Leu   Phe Val Ala Val Ile   Met Asp Asn Phe Asp   Tyr
        1375               1380                   1385

ctc acc cgg gac   tgg tcc atc ctg ggc   cct cat cac ctg gat   gag        4428
Leu Thr Arg Asp   Trp Ser Ile Leu Gly   Pro His His Leu Asp   Glu
        1390               1395                   1400

ttc aag gcc atc   tgg gca gag tat gac   cca gag gct aag ggg   agg        4473
Phe Lys Ala Ile   Trp Ala Glu Tyr Asp   Pro Glu Ala Lys Gly   Arg
        1405               1410                   1415

atc aaa cac ctg   gac gtg gtg acc ctg   ctg aga agg att cag   ccc        4518
Ile Lys His Leu   Asp Val Val Thr Leu   Leu Arg Arg Ile Gln   Pro
        1420               1425                   1430

cct ctg ggc ttt   ggg aag ttc tgc cca   cat cgg gta gct tgt   aag        4563
Pro Leu Gly Phe   Gly Lys Phe Cys Pro   His Arg Val Ala Cys   Lys
        1435               1440                   1445

cgg ctg gtg ggc   atg aac atg ccc ctg   aac agc gac ggc aca   gtc        4608
Arg Leu Val Gly   Met Asn Met Pro Leu   Asn Ser Asp Gly Thr   Val
        1450               1455                   1460
```

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```
acc ttc aat gcc  aca ctc ttt gcc ctg  gtc cgc acg gca ctc  aag      4653
Thr Phe Asn Ala  Thr Leu Phe Ala Leu  Val Arg Thr Ala Leu  Lys
            1465              1470               1475

atc aag acg gaa  ggt aac ttt gag cag  gcc aac gag gag ctg  agg      4698
Ile Lys Thr Glu  Gly Asn Phe Glu Gln  Ala Asn Glu Glu Leu  Arg
            1480              1485               1490

gcc atc atc aag  aag atc tgg aag aga  acc agc atg aag ctc  ttg      4743
Ala Ile Ile Lys  Lys Ile Trp Lys Arg  Thr Ser Met Lys Leu  Leu
            1495              1500               1505

gac cag gtc atc  cct cca ata gga gat  gat gag gtg aca gtg  ggg      4788
Asp Gln Val Ile  Pro Pro Ile Gly Asp  Asp Glu Val Thr Val  Gly
            1510              1515               1520

aag ttc tac gcc  aca ttc ctc atc cag  gag cac ttc cgg aag  ttc      4833
Lys Phe Tyr Ala  Thr Phe Leu Ile Gln  Glu His Phe Arg Lys  Phe
            1525              1530               1535

atg aaa cgc caa  gag gag tat tat ggc  tat cgg ccc aag aag  gac      4878
Met Lys Arg Gln  Glu Glu Tyr Tyr Gly  Tyr Arg Pro Lys Lys  Asp
            1540              1545               1550

att gta cag atc  cag gca ggg ctg cgg  acc att gag gaa gag  gca      4923
Ile Val Gln Ile  Gln Ala Gly Leu Arg  Thr Ile Glu Glu Glu  Ala
            1555              1560               1565

gcc ccc gag atc  tgt cgc acg gtc tca  gga gac ctg gct gct  gag      4968
Ala Pro Glu Ile  Cys Arg Thr Val Ser  Gly Asp Leu Ala Ala  Glu
            1570              1575               1580

gag gag ctg gag  aga gcc atg gtg gag  gct gcg atg gag gag  ggg      5013
Glu Glu Leu Glu  Arg Ala Met Val Glu  Ala Ala Met Glu Glu  Gly
            1585              1590               1595

ata ttc cgg agg  act gga ggc ctg ttt  ggc cag gtg gac aac  ttc      5058
Ile Phe Arg Arg  Thr Gly Gly Leu Phe  Gly Gln Val Asp Asn  Phe
            1600              1605               1610

ctg gaa agg acc  aac tcc ctg ccc cct  gtc atg gcc aat cag  aga      5103
Leu Glu Arg Thr  Asn Ser Leu Pro Pro  Val Met Ala Asn Gln  Arg
            1615              1620               1625

ccc ctc cag ttt  gct gag ata gag atg  gaa gag atg gag tca  cct      5148
Pro Leu Gln Phe  Ala Glu Ile Glu Met  Glu Glu Met Glu Ser  Pro
            1630              1635               1640

gtc ttc ttg gag  gac ttc cca caa gat  cca cgc acc aac ccc  ctg      5193
Val Phe Leu Glu  Asp Phe Pro Gln Asp  Pro Arg Thr Asn Pro  Leu
            1645              1650               1655

gct cgt gcc aat  acc aac aat gcc aac  gcc aat gtc gcc tat  gcg      5238
Ala Arg Ala Asn  Thr Asn Asn Ala Asn  Ala Asn Val Ala Tyr  Ala
            1660              1665               1670

aac agc aac cat  agc aac agc cat gtg  ttt tcc agt gtc cac  tat      5283
Asn Ser Asn His  Ser Asn Ser His Val  Phe Ser Ser Val His  Tyr
            1675              1680               1685

gaa agg gag ttc  cca gaa gag aca gag  acg cct gct acc aga  gga      5328
Glu Arg Glu Phe  Pro Glu Glu Thr Glu  Thr Pro Ala Thr Arg  Gly
            1690              1695               1700

cga gcc ctt ggc  caa ccc tgc agg tcc  ctg gga ccc cac agc  aaa      5373
Arg Ala Leu Gly  Gln Pro Cys Arg Ser  Leu Gly Pro His Ser  Lys
            1705              1710               1715

ccc tgt gtg gag  atg ctg aag gga ctg  ctg acc cag agg gca  atg      5418
Pro Cys Val Glu  Met Leu Lys Gly Leu  Leu Thr Gln Arg Ala  Met
            1720              1725               1730

ccc aga ggc cag  gca cct cct gcc ccc  tgc cag tgc ccc agg  gtg      5463
Pro Arg Gly Gln  Ala Pro Pro Ala Pro  Cys Gln Cys Pro Arg  Val
            1735              1740               1745
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```
gag tcc tcc atg   cct gag gac aga aag   agc tcc aca cca ggg   tct       5508
Glu Ser Ser Met   Pro Glu Asp Arg Lys   Ser Ser Thr Pro Gly   Ser
            1750                  1755                   1760

ctt cat gag gag   aca ccc cac agc agg   agc acc agg gag aat   act       5553
Leu His Glu Glu   Thr Pro His Ser Arg   Ser Thr Arg Glu Asn   Thr
            1765                  1770                   1775

tcc agg tgc tca   gca cca gct aca gcc   ctg ctg atc caa aag   gct       5598
Ser Arg Cys Ser   Ala Pro Ala Thr Ala   Leu Leu Ile Gln Lys   Ala
            1780                  1785                   1790

ctg gtt cga ggg   ggc ctg ggc acc ttg   gca gct gat gca aac   ttc       5643
Leu Val Arg Gly   Gly Leu Gly Thr Leu   Ala Ala Asp Ala Asn   Phe
            1795                  1800                   1805

atc atg gca aca   ggc cag gcc ctc gga   gat gcc tgc caa atg   gaa       5688
Ile Met Ala Thr   Gly Gln Ala Leu Gly   Asp Ala Cys Gln Met   Glu
            1810                  1815                   1820

cca gag gaa gtg   gag atc atg gca aca   gag cta ctg aaa gga   cga       5733
Pro Glu Glu Val   Glu Ile Met Ala Thr   Glu Leu Leu Lys Gly   Arg
            1825                  1830                   1835

gag gcc cca gac   ggc atg gcc agc tcc   ctg gga tgc ctg aac   ctc       5778
Glu Ala Pro Asp   Gly Met Ala Ser Ser   Leu Gly Cys Leu Asn   Leu
            1840                  1845                   1850

ggg tcc tcc ctg   ggc agc ctc gac caa   cac cag ggc tcc cag   gag       5823
Gly Ser Ser Leu   Gly Ser Leu Asp Gln   His Gln Gly Ser Gln   Glu
            1855                  1860                   1865

acc ctt att cct   cca agg ctg tga tgcccacaca gcatcagcat gggcttagag      5877
Thr Leu Ile Pro   Pro Arg Leu
            1870

ctggcatgac caatggggggt ggggaagttg ctggggtgga gaagggctag cccaccgcag      5937

cagcctccct ccctctcagc agctagatgc atgcctgagg cagggtggtc aggaaccacc       5997

tcaaaaagtg cggaggaagt agctggacag gccctgcccc tcaccagcaa gaggcatgat       6057

tggatggagc ttctaatgtc attcaaaaag gcctggtcag tgcctgtccc tagggccact       6117

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1               5               10              15

Lys Lys Pro Val Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe
            20              25              30

Cys Leu Thr Leu Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val
        35              40              45

Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn
    50              55              60
Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn
65              70              75              80

Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val
            85              90              95

Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe
            100             105             110
```

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```
His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr
    115                 120                 125

Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val
    130                 135                 140

Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp
145                 150                 155                 160

Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
                165                 170                 175

Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala
                180                 185                 190

Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile
                195                 200                 205

Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys
    210                 215                 220

Thr Cys Tyr Phe Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu
225                 230                 235                 240

Glu Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile
                245                 250                 255

Asn Gly Ser Glu Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile
                260                 265                 270

Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys
    275                 280                 285

Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala
    290                 295                 300

Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu
305                 310                 315                 320

Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu
                325                 330                 335

Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys
                340                 345                 350

Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser
                355                 360                 365

Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly
    370                 375                 380

Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu
385                 390                 395                 400

Ile Ala Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln
                405                 410                 415
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```
Trp Asn Arg Ile Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys
            420         425             430

Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser
            435         440             445

Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln
450             455             460

Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu
465             470             475             480

Met Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe
            485             490             495

Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu
            500             505             510

Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg
            515             520             525

Cys Ile Arg Leu Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser
    530             535             540

Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala
545             550             555             560

Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu
            565             570             575

Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val
            580             585             590

Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe
            595             600             605

Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile
    610             615             620

Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr
625             630             635             640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe
            645             650             655

Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser
            660             665             670

Ala Gln Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys
            675             680             685

Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys
            690             695             700

Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu
705             710             715     '       720
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```
Lys Ile Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr
            725              730             735

Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile
            740              745      .        750

Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu
            755              760             765           .

Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro
            770              775             780

Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp
785              790              795             800

Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu
            805              810             815

Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu
            820              825             830

Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val
            835              840             845

Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys
            850              855             860

Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu
865              870              875             880

Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu
            885              890             895

Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys
            900              905             910

Gly Leu Lys His Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile
            915              920             925

Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys
            930              935             940

Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu
945              950              955             960

Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys
            965              970             975

Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His
            980              985             990

Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala Met Met Ser Leu Phe
            995              1000            1005

Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu Leu Tyr Lys Ala
            1010             1015            1020
```

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```
Ile Asp  Ser Asn Ala Glu Asp  Val Gly Pro Ile Tyr  Asn Asn Arg
   1025              1030              1035

Val Glu  Met Ala Ile Phe Phe  Ile Ile Tyr Ile Ile  Leu Ile Ala
   1040              1045              1050

Phe Phe  Met Met Asn Ile Phe  Val Gly Phe Val Ile  Val Thr Phe
   1055              1060              1065

Gln Glu  Gln Gly Glu Thr Glu  Tyr Lys Asn Cys Glu  Leu Asp Lys
   1070              1075              1080

Asn Gln  Arg Gln Cys Val Gln  Tyr Ala Leu Lys Ala  Arg Pro Leu
   1085              1090              1095

Arg Cys  Tyr Ile Pro Lys Asn  Pro Tyr Gln Tyr Gln  Val Trp Tyr
   1100              1105              1110

Ile Val  Thr Ser Ser Tyr Phe  Glu Tyr Leu Met Phe  Ala Leu Ile
   1115              1120              1125

Met Leu  Asn Thr Ile Cys Leu  Gly Met Gln His Tyr  Asn Gln Ser
   1130              1135              1140

Glu Gln  Met Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr
   1145              1150              1155

Ile Ile  Phe Thr Leu Glu Met  Ile Leu Lys Leu Met  Ala Phe Lys
   1160              1165              1170

Ala Arg  Gly Tyr Phe Gly Asn  Pro Trp Asn Val Phe  Asp Phe Leu
   1175              1180              1185

Ile Val  Ile Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp
   1190              1195              1200

Thr Phe  Leu Ala Ser Ser Gly  Gly Leu Tyr Cys Leu  Gly Gly Gly
   1205              1210              1215

Cys Gly  Asn Val Asp Pro Asp  Glu Ser Ala Arg Ile  Ser Ser Ala
   1220              1225              1230

Phe Phe  Arg Leu Phe Arg Val  Met Arg Leu Ile Lys  Leu Leu Ser
   1235              1240              1245

Arg Ala  Glu Gly Val Arg Thr  Leu Leu Trp Thr Phe  Ile Lys Ser
   1250              1255              1260

Phe Gln  Ala Leu Pro Tyr Val  Ala Leu Leu Ile Val  Met Leu Phe
   1265              1270              1275

Phe Ile  Tyr Ala Val Ile Gly  Met Gln Met Phe Gly  Lys Ile Ala
   1280              1285              1290

Leu Val  Asp Gly Thr Gln Ile  Asn Arg Asn Asn Asn  Phe Gln Thr
   1295              1300              1305
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70

```
Phe Pro  Gln Ala Val Leu Leu  Leu Phe Arg Cys Ala  Thr Gly Glu
    1310             1315         1320

Ala Trp  Gln Glu Ile Leu Leu  Ala Cys Ser Tyr Gly  Lys Leu Cys
    1325             1330         1335

Asp Pro  Glu Ser Asp Tyr Ala  Pro Gly Glu Glu Tyr  Thr Cys Gly
    1340             1345         1350

Thr Asn  Phe Ala Tyr Tyr Tyr  Phe Ile Ser Phe Tyr  Met Leu Cys
    1355             1360         1365

Ala Phe  Leu Val Ile Asn Leu  Phe Val Ala Val Ile  Met Asp Asn
    1370             1375         1380

Phe Asp  Tyr Leu Thr Arg Asp  Trp Ser Ile Leu Gly  Pro His His
    1385             1390         1395

Leu Asp  Glu Phe Lys Ala Ile  Trp Ala Glu Tyr Asp  Pro Glu Ala
    1400             1405         1410

Lys Gly  Arg Ile Lys His Leu  Asp Val Val Thr Leu  Leu Arg Arg
    1415             1420         1425

Ile Gln  Pro Pro Leu Gly Phe  Gly Lys Phe Cys Pro  His Arg Val
    1430             1435         1440

Ala Cys  Lys Arg Leu Val Gly  Met Asn Met Pro Leu  Asn Ser Asp
    1445             1450         1455

Gly Thr  Val Thr Phe Asn Ala  Thr Leu Phe Ala Leu  Val Arg Thr
    1460             1465         1470

Ala Leu  Lys Ile Lys Thr Glu  Gly Asn Phe Glu Gln  Ala Asn Glu
    1475             1480         1485

Glu Leu  Arg Ala Ile Ile Lys  Lys Ile Trp Lys Arg  Thr Ser Met
    1490             1495         1500

Lys Leu  Leu Asp Gln Val Ile  Pro Pro Ile Gly Asp  Asp Glu Val
    1505             1510         1515

Thr Val  Gly Lys Phe Tyr Ala  Thr Phe Leu Ile Gln  Glu His Phe
    1520             1525         1530

Arg Lys  Phe Met Lys Arg Gln  Glu Glu Tyr Tyr Gly  Tyr Arg Pro
    1535             1540         1545

Lys Lys  Asp Ile Val Gln Ile  Gln Ala Gly Leu Arg  Thr Ile Glu
    1550             1555         1560

Glu Glu  Ala Ala Pro Glu Ile  Cys Arg Thr Val Ser  Gly Asp Leu
    1565             1570         1575

Ala Ala  Glu Glu Glu Leu Glu  Arg Ala Met Val Glu  Ala Ala Met
    1580             1585         1590
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```
Glu Glu  Gly Ile Phe Arg Arg  Thr Gly Gly Leu Phe  Gly Gln Val
    1595                 1600                  1605

Asp Asn  Phe Leu Glu Arg Thr  Asn Ser Leu Pro Pro  Val Met Ala
    1610                 1615                  1620

Asn Gln  Arg Pro Leu Gln Phe  Ala Glu Ile Glu Met  Glu Glu Met
    1625                 1630                  1635

Glu Ser  Pro Val Phe Leu Glu  Asp Phe Pro Gln Asp  Pro Arg Thr
    1640                 1645                  1650

Asn Pro  Leu Ala Arg Ala Asn  Thr Asn Asn Ala Asn  Ala Asn Val
    1655                 1660                  1665

Ala Tyr  Ala Asn Ser Asn His  Ser Asn Ser His Val  Phe Ser Ser
    1670                 1675                  1680

Val His  Tyr Glu Arg Glu Phe  Pro Glu Glu Thr Glu  Thr Pro Ala
    1685                 1690                  1695

Thr Arg  Gly Arg Ala Leu Gly  Gln Pro Cys Arg Ser  Leu Gly Pro
    1700                 1705                  1710

His Ser  Lys Pro Cys Val Glu  Met Leu Lys Gly Leu  Leu Thr Gln
    1715                 1720                  1725

Arg Ala  Met Pro Arg Gly Gln  Ala Pro Pro Ala Pro  Cys Gln Cys
    1730                 1735                  1740

Pro Arg  Val Glu Ser Ser Met  Pro Glu Asp Arg Lys  Ser Ser Thr
    1745                 1750                  1755

Pro Gly  Ser Leu His Glu Glu  Thr Pro His Ser Arg  Ser Thr Arg
    1760                 1765                  1770

Glu Asn  Thr Ser Arg Cys Ser  Ala Pro Ala Thr Ala  Leu Leu Ile
    1775                 1780                  1785

Gln Lys  Ala Leu Val Arg Gly  Gly Leu Gly Thr Leu  Ala Ala Asp
    1790                 1795                  1800

Ala Asn  Phe Ile Met Ala Thr  Gly Gln Ala Leu Gly  Asp Ala Cys
    1805                 1810                  1815

Gln Met  Glu Pro Glu Glu Val  Glu Ile Met Ala Thr  Glu Leu Leu
    1820                 1825                  1830

Lys Gly  Arg Glu Ala Pro Asp  Gly Met Ala Ser Ser  Leu Gly Cys
    1835                 1840                  1845

Leu Asn  Leu Gly Ser Ser Leu  Gly Ser Leu Asp Gln  His Gln Gly
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Ser Gln  Glu Thr Leu Ile Pro  Pro Arg Leu
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72

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gacagcctca gccagcctag tccccaaggc gggggcattg gggacacagg gaagggaaag     180

cactggggtg ggggagcagg agaaagccag attcccaggg aagcc atg gag cca tcc     237
                                                    Met Glu Pro Ser
                                                      1

tca ccc cag gat gaa ggc ctg agg aag aaa cag ccc aag aag cca gtt     285
Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro Lys Lys Pro Val
  5                  10                  15                  20

cct gag att ctg cca agg cca ccc cgg gct ttg ttc tgc ctg acc ctg     333
Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe Cys Leu Thr Leu
                 25                  30                  35

gag aac ccc ctg agg aag gcc tgc atc agc att gta gaa tgg aag ccc     381
Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val Glu Trp Lys Pro
             40                  45                  50

ttc gag acg atc atc ttg ctc acc atc ttt gcc aat tgt gtg gcc ctg     429
Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn Cys Val Ala Leu
         55                  60                  65

gcc gtg tac ctg ccc atg ccg gaa gat gac aac aac tct ctg aac ctc     477
Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn Ser Leu Asn Leu
     70                  75                  80

ggc ctg gag aag ctg gag tat ttc ttc ctc att gtc ttc tcg att gaa     525
Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val Phe Ser Ile Glu
 85                  90                  95                 100

gcc gcc atg aag atc att gcc tac ggc ttc tta ttc cac cag gac gct     573
Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe His Gln Asp Ala
                105                 110                 115

tac ctg cgc agt ggc tgg aat gtg ctg gac ttc acc att gtc ttc ctg     621
Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr Ile Val Phe Leu
            120                 125                 130

ggg gtc ttc acc gtg att ctg gaa cag gtt aac gtc atc caa agc cac     669
Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val Ile Gln Ser His
            135                 140                 145

aca gcc cca atg agc agc aaa gga gcc ggc ttg gat gtc aag gcc ctc     717
Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp Val Lys Ala Leu
        150                 155                 160

aga gcc ttc cga gtg ctc aga ccc ctc cgg ctg gtg tcg ggg gtg cct     765
Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro
165                 170                 175                 180

agc ctg cag gtg gtc ctg aac tcc atc ttc aag gcc atg ctc ccc ctc     813
Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala Met Leu Pro Leu
                185                 190                 195

ttt cac atc gcc ctg ctg gtc ctc ttt atg gtc atc atc tat gcc atc     861
Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile Ile Tyr Ala Ile
            200                 205                 210
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atc ggg ctg gag ctc ttc aag ggc aag atg cac aag acc tgc tac ttc          909
Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys Thr Cys Tyr Phe
        215             220             225

att ggt aca gat atc gtg gcc acg gtg gag aat gaa gag cca tcg ccc          957
Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu Glu Pro Ser Pro
        230             235             240

tgc gcc agg acg ggc tca ggg cgc cgg tgc acc atc aat ggc agt gag          1005
Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile Asn Gly Ser Glu
245             250             255             260

tgc cgg ggc ggc tgc cca ggg ccc aac cat ggc atc acc cac ttc gac          1053
Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile Thr His Phe Asp
                265             270             275

aac ttc ggc ttc tcc atg ctc acc gtg tac cag tgc att acc atg gag          1101
Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys Ile Thr Met Glu
                280             285             290

gga tgg act gac gtc ctt tac tgg gtc aat gat gcc atc ggg aat gag          1149
Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Asn Glu
                295             300             305

tgg ccc tgg atc tat ttt gtc acc ctc att ttg ctg gga tcc ttc ttc          1197
Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu Gly Ser Phe Phe
        310             315             320

atc ctc aac ctg gtg ctg ggt gtc ctg agt ggg gaa ttc acc aag gag          1245
Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu Phe Thr Lys Glu
325             330             335             340

cgg gag aag gcc aag tcc agg gga acc ttc cag aag ctc cgg gag aag          1293
Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys Leu Arg Glu Lys
                345             350             355

cag caa cta gat gag gac ctt cgg ggc tac atg agc tgg atc acg cag          1341
Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser Trp Ile Thr Gln
                360             365             370

ggc gag gtc atg gat gtt gag gac ttc aga gaa gga aaa ctg tct ttg          1389
Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly Lys Leu Ser Leu
                375             380             385

gat gaa ggt ggc tct gac aca gag agc ctg tat gaa att gca ggc ttg          1437
Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu Ile Ala Gly Leu
        390             395             400

aac aaa atc atc cag ttc atc cga cat tgg agg cag tgg aac cgc atc          1485
Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln Trp Asn Arg Ile
405             410             415             420

ttt cgc tgg aag tgc cat gac atc gtg aag tcc aag gtc ttc tat tgg          1533
Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys Val Phe Tyr Trp
                425             430             435

ctg gtg att ctc atc gtt gcc ctc aac acc ctg tct atc gcc tca gag          1581
Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser Ile Ala Ser Glu
                440             445             450

cac cac aac cag ccg cac tgg ctg acc cgt ttg caa gac att gcc aac          1629
His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln Asp Ile Ala Asn
                455             460             465

cgg gtg ctg ctg tcc ctc ttc acc act gag atg ctg atg aag atg tac          1677
Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu Met Lys Met Tyr
                470             475             480

ggg ctg ggc ctg cgc cag tac ttc atg tct atc ttc aac cgc ttc gac          1725
Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe Asn Arg Phe Asp
485             490             495             500

tgc ttc gtg gtg tgc agc ggt atc ctg gag atc ctg ctg gtg gag tcg          1773
Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu Leu Val Glu Ser
                505             510             515
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ggc gcc atg aca ccc ctg ggc atc tcc gtg ctc cgc tgc atc cgc ctc     1821
Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg Cys Ile Arg Leu
        520             525             530

ctg agg atc ttc aag atc acc aaa tat tgg acg tcg ctg agc aac ctg     1869
Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser Leu Ser Asn Leu
        535             540             545

gtg gca tcc ctg ctc aac tcc atc cgc tcc atc gcc tcc ctg ctg ctg     1917
Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala Ser Leu Leu Leu
        550             555             560

ctg ctc ttc ctc ttc atc gtc atc ttc cgc ctc ctg ggc atg cag ctc     1965
Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu Gly Met Gln Leu
565             570             575             580

ttt ggg ggg agg tat gac ttt gaa gac aca gaa gta cgg cgc agc aac     2013
Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val Arg Arg Ser Asn
            585             590             595

ttt gac aac ttt ccc caa gcc ctc atc agc gtc ttc cag gta ctg aca     2061
Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe Gln Val Leu Thr
            600             605             610

ggg gaa gac tgg acc tca atg atg tac aat ggg atc atg gcc tcg agc     2109
Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile Met Ala Ser Ser
        615             620             625

ggg ccg tcc tac cct ggc atg ctt gtg tgc att tac ttc atc atc ctt     2157
Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr Phe Ile Ile Leu
        630             635             640

ttc gtc tgt ggc aac tac atc ctg ctc aat gtc ttc ctg gcc att gcc     2205
Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala Ile Ala
645             650             655             660

gtg gac aac ctg gcc gag gcg gag agc ctg act tct gcc cag aag gcc     2253
Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser Ala Gln Lys Ala
            665             670             675

aag gct gag gag aaa aaa cgc agg aag atg tcc aag ggt ctc cca gac     2301
Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys Gly Leu Pro Asp
            680             685             690

aag tca gaa gag gag aag tca acg atg gcc aag aag ctg gag cag aaa     2349
Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys Leu Glu Gln Lys
            695             700             705

ccc aag ggt gag ggc atc ccc acc act gcc aag ctg aaa atc gat gag     2397
Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu Lys Ile Asp Glu
        710             715             720

ttt gaa tct aat gtc aat gag gtg aag gat ccc tac ccc tca gcc gac     2445
Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr Pro Ser Ala Asp
725             730             735             740

ttc cca ggg gat gac gag gaa gat gag cct gag atc ccg ctg agc ccc     2493
Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile Pro Leu Ser Pro
            745             750             755

cga cca cgt ccc ctg gct gag ctg cag ctg aaa gag aag gcc gtg ccc     2541
Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu Lys Ala Val Pro
            760             765             770

att cca gaa gcc agc tcc ttc ttc atc ttc agc ccc acc aat aag atc     2589
Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro Thr Asn Lys Ile
            775             780             785

cgt gtc ctg tgt cac cgc atc gtc aat gcc acc tgg ttc acc aac ttc     2637
Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp Phe Thr Asn Phe
        790             795             800

atc ctg ctc ttc atc ctg ctc agc agc gct gca ctg gct gcg gaa gac     2685
Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp
805             810             815             820
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ccc atc cgg gct gat tcc atg aga aat cag atc ctt aaa cac ttt gac        2733
Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu Lys His Phe Asp
                825             830             835

atc ggg ttc acc tct gtc ttc act gtg gag att gtc ctc aag atg acg        2781
Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val Leu Lys Met Thr
                840             845             850

acc tac gga gcc ttc ctg cac aag ggt tcc ttc tgc cgc aat tac ttc        2829
Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys Arg Asn Tyr Phe
            855             860             865

aac atg ctg gac ctg ctg gtg gtg gcc gtg tcc ctc atc tcc atg gga        2877
Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu Ile Ser Met Gly
        870             875             880

ctt gag tcc agt gcc atc tcc gtg gtg aag atc ctg agg gtg ctg agg        2925
Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg
885             890             895             900

gtg ctc cga cca ctc aga gcc atc aac aga gcc aag ggg ttg aag cac        2973
Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys Gly Leu Lys His
            905             910             915

gtg gct agg tgc atg ttc gtg gcc atc agc acc atc ggg aac atc gtg        3021
Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile Gly Asn Ile Val
            920             925             930

ctg gtc act acc ctc cta cag ttc atg ttt gcc tgc atc ggc gtc cag        3069
Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys Ile Gly Val Gln
            935             940             945

ctc ttc aag ggg aag ttc ttc agg tgc acc gac ttg tcc aag atg aca        3117
Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu Ser Lys Met Thr
        950             955             960

gag gag gag tgc agg ggc tac tac tac gtg tac aag gac ggg gac ccc        3165
Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys Asp Gly Asp Pro
965             970             975             980

atg cag ata gag ctg cgt cac cgc gag tgg gta cac agc gac ttc cac        3213
Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His Ser Asp Phe His
                985             990             995

ttc gac aat gtg   ctc tca gcc atg atg   tcc ctc ttc acg gtc   tcc      3258
Phe Asp Asn Val   Leu Ser Ala Met Met   Ser Leu Phe Thr Val   Ser
            1000             1005             1010

acc ttc gag gga   tgg cct cag ctg ctg   tac aag gcc ata gac   tcc      3303
Thr Phe Glu Gly   Trp Pro Gln Leu Leu   Tyr Lys Ala Ile Asp   Ser
            1015             1020             1025

aat gcg gag gac   gtg ggt ccc atc tac   aac aac cgt gtg gag   atg      3348
Asn Ala Glu Asp   Val Gly Pro Ile Tyr   Asn Asn Arg Val Glu   Met
            1030             1035             1040

gcc atc ttc ttc   atc atc tac atc atc   ctc att gcc ttc ttc   atg      3393
Ala Ile Phe Phe   Ile Ile Tyr Ile Ile   Leu Ile Ala Phe Phe   Met
            1045             1050             1055

atg aac atc ttt   gtg ggc ttc gtc att   gtc acc ttc cag gag   cag      3438
Met Asn Ile Phe   Val Gly Phe Val Ile   Val Thr Phe Gln Glu   Gln
            1060             1065             1070

gga gag act gag   tac aag aac tgt gag   ctg gac aag aac cag   cgc      3483
Gly Glu Thr Glu   Tyr Lys Asn Cys Glu   Leu Asp Lys Asn Gln   Arg
            1075             1080             1085

caa tgt gta cag   tat gcc ctg aag gcc   cgc cca ctg agg tgc   tac      3528
Gln Cys Val Gln   Tyr Ala Leu Lys Ala   Arg Pro Leu Arg Cys   Tyr
            1090             1095             1100

att ccc aaa aac   cca tac cag tac cag   gtg tgg tac att gtc   acc      3573
Ile Pro Lys Asn   Pro Tyr Gln Tyr Gln   Val Trp Tyr Ile Val   Thr
            1105             1110             1115
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tcc tcc tac ttt  gaa tac ctg atg ttt  gcc ctc atc atg ctc  aac    3618
Ser Ser Tyr Phe  Glu Tyr Leu Met Phe  Ala Leu Ile Met Leu  Asn
        1120             1125                 1130

acc atc tgc ctc  ggc atg cag cac tac  aac cag tcg gag cag  atg    3663
Thr Ile Cys Leu  Gly Met Gln His Tyr  Asn Gln Ser Glu Gln  Met
        1135             1140                 1145

aac cac atc tca  gac atc ctc aat gtg  gcc ttc act atc atc  ttc    3708
Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr Ile Ile  Phe
        1150             1155                 1160

acc ctg gag atg  atc ctc aag ctc atg  gcc ttc aag gcc agg  ggc    3753
Thr Leu Glu Met  Ile Leu Lys Leu Met  Ala Phe Lys Ala Arg  Gly
        1165             1170                 1175

tac ttt gga aac  ccc tgg aat gtg ttt  gac ttc ctg att gtc  att    3798
Tyr Phe Gly Asn  Pro Trp Asn Val Phe  Asp Phe Leu Ile Val  Ile
        1180             1185                 1190

ggc agc atc att  gat gtc atc ctc agt  gag atc gac act ttc  ctg    3843
Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp Thr Phe  Leu
        1195             1200                 1205

gcc tcc agc ggg  gga ctg tat tgc ctg  ggt gga ggc tgc ggg  aac    3888
Ala Ser Ser Gly  Gly Leu Tyr Cys Leu  Gly Gly Gly Cys Gly  Asn
        1210             1215                 1220

gtt gac cca gat  gag agt gcc cgc atc  tcc agc gcc ttc ttc  cgc    3933
Val Asp Pro Asp  Glu Ser Ala Arg Ile  Ser Ser Ala Phe Phe  Arg
        1225             1230                 1235

ctg ttc cgt gtc  atg agg ctg atc aag  ctg ctg agc cgg gca  gaa    3978
Leu Phe Arg Val  Met Arg Leu Ile Lys  Leu Leu Ser Arg Ala  Glu
        1240             1245                 1250

gga gtg cga acc  ctc ctg tgg acg ttc  atc aag tcc ttc cag  gcc    4023
Gly Val Arg Thr  Leu Leu Trp Thr Phe  Ile Lys Ser Phe Gln  Ala
        1255             1260                 1265

cta ccc tac gtg  gct ctg ctc atc gtc  atg ctc ttc ttc atc  tac    4068
Leu Pro Tyr Val  Ala Leu Leu Ile Val  Met Leu Phe Phe Ile  Tyr
        1270             1275                 1280

gct gtc atc ggc  atg cag atg ttt ggg  aag atc gcc ttg gtg  gat    4113
Ala Val Ile Gly  Met Gln Met Phe Gly  Lys Ile Ala Leu Val  Asp
        1285             1290                 1295

ggg acc caa ata  aac cgg aac aac aac  ttc cag acc ttc cca  caa    4158
Gly Thr Gln Ile  Asn Arg Asn Asn Asn  Phe Gln Thr Phe Pro  Gln
        1300             1305                 1310

gct gtg cta ctg  ctc ttc agg tgt gca  aca ggt gag gcc tgg  cag    4203
Ala Val Leu Leu  Leu Phe Arg Cys Ala  Thr Gly Glu Ala Trp  Gln
        1315             1320                 1325

gag atc cta ctg  gcc tgc agc tat ggg  aag ctg tgt gac cca  gag    4248
Glu Ile Leu Leu  Ala Cys Ser Tyr Gly  Lys Leu Cys Asp Pro  Glu
        1330             1335                 1340

tcg gac tat gcc  cca ggg gag gag tac  aca tgt ggc acc aac  ttt    4293
Ser Asp Tyr Ala  Pro Gly Glu Glu Tyr  Thr Cys Gly Thr Asn  Phe
        1345             1350                 1355

gca tac tac tac  ttc atc agc ttc tac  atg ctc tgt gcc ttc  ctg    4338
Ala Tyr Tyr Tyr  Phe Ile Ser Phe Tyr  Met Leu Cys Ala Phe  Leu
        1360             1365                 1370

gtc atc aac ctc  ttt gtg gct gtc atc  atg gac aat ttt gac  tac    4383
Val Ile Asn Leu  Phe Val Ala Val Ile  Met Asp Asn Phe Asp  Tyr
        1375             1380                 1385

ctc acc cgg gac  tgg tcc atc ctg ggc  cct cat cac ctg gat  gag    4428
Leu Thr Arg Asp  Trp Ser Ile Leu Gly  Pro His His Leu Asp  Glu
        1390             1395                 1400
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ttc aag gcc atc  tgg gca gag tat gac  cca gag gct aag ggg  agg      4473
Phe Lys Ala Ile  Trp Ala Glu Tyr Asp  Pro Glu Ala Lys Gly  Arg
            1405               1410               1415

atc aaa cac ctg  gac gtg gtg acc ctg  ctg aga agg att cag  ccc      4518
Ile Lys His Leu  Asp Val Val Thr Leu  Leu Arg Arg Ile Gln  Pro
            1420               1425               1430

cct ctg ggc ttt  ggg aag ttc tgc cca  cat cgg gta gct tgt  aag      4563
Pro Leu Gly Phe  Gly Lys Phe Cys Pro  His Arg Val Ala Cys  Lys
            1435               1440               1445

cgg ctg gtg ggc  atg aac atg ccc ctg  aac agc gac ggc aca  gtc      4608
Arg Leu Val Gly  Met Asn Met Pro Leu  Asn Ser Asp Gly Thr  Val
            1450               1455               1460

acc ttc aat gcc  aca ctc ttt gcc ctg  gtc cgc acg gca ctc  aag      4653
Thr Phe Asn Ala  Thr Leu Phe Ala Leu  Val Arg Thr Ala Leu  Lys
            1465               1470               1475

atc aag acg gaa  ggt aac ttt gag cag  gcc aac gag gag ctg  agg      4698
Ile Lys Thr Glu  Gly Asn Phe Glu Gln  Ala Asn Glu Glu Leu  Arg
            1480               1485               1490

gcc atc atc aag  aag atc tgg aag aga  acc agc atg aag ctc  ttg      4743
Ala Ile Ile Lys  Lys Ile Trp Lys Arg  Thr Ser Met Lys Leu  Leu
            1495               1500               1505

gac cag gtc atc  cct cca ata gga gat  gat gag gtg aca gtg  ggg      4788
Asp Gln Val Ile  Pro Pro Ile Gly Asp  Asp Glu Val Thr Val  Gly
            1510               1515               1520

aag ttc tac gcc  aca ttc ctc atc cag  gag cac ttc cgg aag  ttc      4833
Lys Phe Tyr Ala  Thr Phe Leu Ile Gln  Glu His Phe Arg Lys  Phe
            1525               1530               1535

atg aaa cgc caa  gag gag tat tat ggc  tat cgg ccc aag aag  gac      4878
Met Lys Arg Gln  Glu Glu Tyr Tyr Gly  Tyr Arg Pro Lys Lys  Asp
            1540               1545               1550

att gta cag atc  cag gca ggg ctg cgg  acc att gag gaa gag  gca      4923
Ile Val Gln Ile  Gln Ala Gly Leu Arg  Thr Ile Glu Glu Glu  Ala
            1555               1560               1565

gcc ccc gag atc  tgt cgc acg gtc tca  gga gac ctg gct gct  gag      4968
Ala Pro Glu Ile  Cys Arg Thr Val Ser  Gly Asp Leu Ala Ala  Glu
            1570               1575               1580

gag gag ctg gag  aga gcc atg gtg gag  gct gcg atg gag gag  ggg      5013
Glu Glu Leu Glu  Arg Ala Met Val Glu  Ala Ala Met Glu Glu  Gly
            1585               1590               1595

ata ttc cgg agg  act gga ggc ctg ttt  ggc cag gtg gac aac  ttc      5058
Ile Phe Arg Arg  Thr Gly Gly Leu Phe  Gly Gln Val Asp Asn  Phe
            1600               1605               1610

ctg gaa agg acc  aac tcc ctg ccc cct  gtc atg gcc aat cag  aga      5103
Leu Glu Arg Thr  Asn Ser Leu Pro Pro  Val Met Ala Asn Gln  Arg
            1615               1620               1625

ccc ctc cag ttt  gct gag ata gag atg  gaa gag atg gag tca  cct      5148
Pro Leu Gln Phe  Ala Glu Ile Glu Met  Glu Glu Met Glu Ser  Pro
            1630               1635               1640

gtc ttc ttg gag  gac ttc cca caa gat  cca cgc acc aac ccc  ctg      5193
Val Phe Leu Glu  Asp Phe Pro Gln Asp  Pro Arg Thr Asn Pro  Leu
            1645               1650               1655

gct cgt gcc aat  acc aac aat gcc aac  gcc aat gtc gcc tat  gcg      5238
Ala Arg Ala Asn  Thr Asn Asn Ala Asn  Ala Asn Val Ala Tyr  Ala
            1660               1665               1670

aac agc aac cat  agc aac agc cat gtg  ttt tcc agt gtc cac  tat      5283
Asn Ser Asn His  Ser Asn Ser His Val  Phe Ser Ser Val His  Tyr
            1675               1680               1685
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gaa agg gag ttc   cca gaa gag aca gag   acg cct gct acc aga   gga        5328
Glu Arg Glu Phe   Pro Glu Glu Thr Glu   Thr Pro Ala Thr Arg   Gly
            1690                  1695                  1700

cga gcc ctt ggc   caa ccc tgc agg tcc   ctg gga ccc cac agc   aaa        5373
Arg Ala Leu Gly   Gln Pro Cys Arg Ser   Leu Gly Pro His Ser   Lys
            1705                  1710                  1715

ccc tgt gtg gag   atg ctg aag gga ctg   ctg acc cag agg gca   atg        5418
Pro Cys Val Glu   Met Leu Lys Gly Leu   Leu Thr Gln Arg Ala   Met
            1720                  1725                  1730

ccc aga ggc cag   gca cct cct gcc ccc   tgc cag tgc ccc agg   gtg        5463
Pro Arg Gly Gln   Ala Pro Pro Ala Pro   Cys Gln Cys Pro Arg   Val
            1735                  1740                  1745

gag tcc tcc atg   cct gag gac aga aag   agc tcc aca cca ggg   tct        5508
Glu Ser Ser Met   Pro Glu Asp Arg Lys   Ser Ser Thr Pro Gly   Ser
            1750                  1755                  1760

ctt cat gag gag   aca ccc cac agc agg   agc acc agg gag aat   act        5553
Leu His Glu Glu   Thr Pro His Ser Arg   Ser Thr Arg Glu Asn   Thr
            1765                  1770                  1775

tcc agg tgc tca   gca cca gct aca gcc   ctg ctg atc caa aag   gct        5598
Ser Arg Cys Ser   Ala Pro Ala Thr Ala   Leu Leu Ile Gln Lys   Ala
            1780                  1785                  1790

ctg gtt cga ggg   ggc ctg ggc acc ttg   gca gct gat gca aac   ttc        5643
Leu Val Arg Gly   Gly Leu Gly Thr Leu   Ala Ala Asp Ala Asn   Phe
            1795                  1800                  1805

atc atg gca aca   ggc cag gcc ctc gga   gat gcc tgc caa atg   gaa        5688
Ile Met Ala Thr   Gly Gln Ala Leu Gly   Asp Ala Cys Gln Met   Glu
            1810                  1815                  1820

cca gag gaa gtg   gag atc atg gca aca   gag cta ctg aaa gga   cga        5733
Pro Glu Glu Val   Glu Ile Met Ala Thr   Glu Leu Leu Lys Gly   Arg
            1825                  1830                  1835

gag gcc cca gac   ggc atg gcc agc tcc   ctg gga tgc ctg aac   ctc        5778
Glu Ala Pro Asp   Gly Met Ala Ser Ser   Leu Gly Cys Leu Asn   Leu
            1840                  1845                  1850

ggg tcc tcc ctg   ggc agc ctc gac caa   cac cag ggc tcc cag   gag        5823
Gly Ser Ser Leu   Gly Ser Leu Asp Gln   His Gln Gly Ser Gln   Glu
            1855                  1860                  1865

acc ctt att cct   cca agg ctg tga   tgcccacaca gcatcagcat gggcttagag      5877
Thr Leu Ile Pro   Pro Arg Leu
            1870

ctggcatgac caatgggggt ggggaagttg ctggggtgga aagggctag cccaccgcag         5937

cagcctccct ccctctcagc agctagatgc atgcctgagg cagggtggtc aggaaccacc        5997

tcaaaaagtg cggaggaagt agctggacag gccctgcccc tcaccagcaa gaggcatgat        6057

tggatggagc ttctaatgtc attcaaaaag gcctggtcag tgcctgtccc tagggccact        6117

cccacctgca ggacattaaa atctccaggc ctgtgacact ggc                         6160
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<212>   PRT
<213>   Homo sapiens
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Met Glu Pro Ser Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro
1               5                   10                  15


Lys Lys Pro Val Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe
            20                  25                  30
```

```
Cys Leu Thr Leu Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val
    35              40              45

Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn
    50              55              60

Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn
65              70              75              80

Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val
            85              90              95

Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe
        100             105             110

His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr
        115             120             125

Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val
    130             135             140

Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp
145             150             155             160

Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
            165             170             175

Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala
            180             185             190

Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile
            195             200             205

Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys
    210             215             220

Thr Cys Tyr Phe Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu
225             230             235             240

Glu Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile
            245             250             255

Asn Gly Ser Glu Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile
            260             265             270

Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys
        275             280             285

Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala
    290             295             300

Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu
305             310             315             320

Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu
            325             330             335
```

80

Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys
         340   345   350

Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser
         355   360   365

Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly
         370   375   380

Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu
385   390   395   400

Ile Ala Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln
                 405   410   415

Trp Asn Arg Ile Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys
             420   425   430

Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser
         435   440   445

Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln
    450   455   460

Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu
465   470   475   480

Met Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe
             485   490   495

Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu
         500   505   510

Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg
         515   520   525

Cys Ile Arg Leu Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser
    530   535   540

Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala
545   550   555   560

Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu
             565   570   575

Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val
             580   585   590

Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe
         595   600   605

Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile
    610   615   620

Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr
625   630   635   640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe
            645   650   655

Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser
            660   665   670

Ala Gln Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys
            675   680   685

Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys
            690   695   700

Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu
705   710   715   720

Lys Ile Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr
            725   730   735

Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile
            740   745   750

Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu
            755   760   765

Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro
770   775   780

Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp
785   790   795   800

Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu
            805   810   815

Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu
            820   825   830

Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val
            835   840   845

Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys
850   855   860

Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu
865   870   875   880

Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu
            885   890   895

Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys
            900   905   910

Gly Leu Lys His Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile
            915   920   925

Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys
            930   935   940

82

```
Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu
945                 950                 955                 960

Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys
                965                 970                 975

Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His
                980                 985                 990

Ser Asp Phe His Phe Asp Asn Val  Leu Ser Ala Met Met  Ser Leu Phe
            995                 1000                1005

Thr Val  Ser Thr Phe Glu Gly  Trp Pro Gln Leu Leu  Tyr Lys Ala
    1010                1015                1020

Ile Asp  Ser Asn Ala Glu Asp  Val Gly Pro Ile Tyr  Asn Asn Arg
    1025                1030                1035

Val Glu  Met Ala Ile Phe Phe  Ile Ile Tyr Ile Ile  Leu Ile Ala
    1040                1045                1050

Phe Phe  Met Met Asn Ile Phe  Val Gly Phe Val Ile  Val Thr Phe
    1055                1060                1065

Gln Glu  Gln Gly Glu Thr Glu  Tyr Lys Asn Cys Glu  Leu Asp Lys
    1070                1075                1080

Asn Gln  Arg Gln Cys Val Gln  Tyr Ala Leu Lys Ala  Arg Pro Leu
    1085                1090                1095

Arg Cys  Tyr Ile Pro Lys Asn  Pro Tyr Gln Tyr Gln  Val Trp Tyr
    1100                1105                1110

Ile Val  Thr Ser Ser Tyr Phe  Glu Tyr Leu Met Phe  Ala Leu Ile
    1115                1120                1125

Met Leu  Asn Thr Ile Cys Leu  Gly Met Gln His Tyr  Asn Gln Ser
    1130                1135                1140

Glu Gln  Met Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr
    1145                1150                1155

Ile Ile  Phe Thr Leu Glu Met  Ile Leu Lys Leu Met  Ala Phe Lys
    1160                1165                1170

Ala Arg  Gly Tyr Phe Gly Asn  Pro Trp Asn Val Phe  Asp Phe Leu
    1175                1180                1185

Ile Val  Ile Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp
    1190                1195                1200

Thr Phe  Leu Ala Ser Ser Gly  Gly Leu Tyr Cys Leu  Gly Gly Gly
    1205                1210                1215

Cys Gly  Asn Val Asp Pro Asp  Glu Ser Ala Arg Ile  Ser Ser Ala
    1220                1225                1230
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83

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Phe Phe  Arg Leu Phe Arg Val  Met Arg Leu Ile Lys  Leu Leu Ser
    1235             1240             1245

Arg Ala  Glu Gly Val Arg Thr  Leu Leu Trp Thr Phe  Ile Lys Ser
    1250             1255             1260

Phe Gln  Ala Leu Pro Tyr Val  Ala Leu Leu Ile Val  Met Leu Phe
    1265             1270             1275

Phe Ile  Tyr Ala Val Ile Gly  Met Gln Met Phe Gly  Lys Ile Ala
    1280             1285             1290

Leu Val  Asp Gly Thr Gln Ile  Asn Arg Asn Asn Asn  Phe Gln Thr
    1295             1300             1305

Phe Pro  Gln Ala Val Leu Leu  Leu Phe Arg Cys Ala  Thr Gly Glu
    1310             1315             1320

Ala Trp  Gln Glu Ile Leu Leu  Ala Cys Ser Tyr Gly  Lys Leu Cys
    1325             1330             1335

Asp Pro  Glu Ser Asp Tyr Ala  Pro Gly Glu Glu Tyr  Thr Cys Gly
    1340             1345             1350

Thr Asn  Phe Ala Tyr Tyr Tyr  Phe Ile Ser Phe Tyr  Met Leu Cys
    1355             1360             1365

Ala Phe  Leu Val Ile Asn Leu  Phe Val Ala Val Ile  Met Asp Asn
    1370             1375             1380

Phe Asp  Tyr Leu Thr Arg Asp  Trp Ser Ile Leu Gly  Pro His His
    1385             1390             1395

Leu Asp  Glu Phe Lys Ala Ile  Trp Ala Glu Tyr Asp  Pro Glu Ala
    1400             1405             1410

Lys Gly  Arg Ile Lys His Leu  Asp Val Val Thr Leu  Leu Arg Arg
    1415             1420             1425

Ile Gln  Pro Pro Leu Gly Phe  Gly Lys Phe Cys Pro  His Arg Val
    1430             1435             1440

Ala Cys  Lys Arg Leu Val Gly  Met Asn Met Pro Leu  Asn Ser Asp
    1445             1450             1455

Gly Thr  Val Thr Phe Asn Ala  Thr Leu Phe Ala Leu  Val Arg Thr
    1460             1465             1470

Ala Leu  Lys Ile Lys Thr Glu  Gly Asn Phe Glu Gln  Ala Asn Glu
    1475             1480             1485

Glu Leu  Arg Ala Ile Ile Lys  Lys Ile Trp Lys Arg  Thr Ser Met
    1490             1495             1500

Lys Leu  Leu Asp Gln Val Ile  Pro Pro Ile Gly Asp  Asp Glu Val
    1505             1510             1515
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84

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Thr Val  Gly Lys Phe Tyr Ala  Thr Phe Leu Ile Gln  Glu His Phe
    1520             1525              1530

Arg Lys  Phe Met Lys Arg Gln  Glu Glu Tyr Tyr Gly  Tyr Arg Pro
    1535             1540              1545

Lys Lys  Asp Ile Val Gln Ile  Gln Ala Gly Leu Arg  Thr Ile Glu
    1550             1555              1560

Glu Glu  Ala Ala Pro Glu Ile  Cys Arg Thr Val Ser  Gly Asp Leu
    1565             1570              1575

Ala Ala  Glu Glu Glu Leu Glu  Arg Ala Met Val Glu  Ala Ala Met
    1580             1585              1590

Glu Glu  Gly Ile Phe Arg Arg  Thr Gly Gly Leu Phe  Gly Gln Val
    1595             1600              1605

Asp Asn  Phe Leu Glu Arg Thr  Asn Ser Leu Pro Pro  Val Met Ala
    1610             1615              1620

Asn Gln  Arg Pro Leu Gln Phe  Ala Glu Ile Glu Met  Glu Glu Met
    1625             1630              1635

Glu Ser  Pro Val Phe Leu Glu  Asp Phe Pro Gln Asp  Pro Arg Thr
    1640             1645              1650

Asn Pro  Leu Ala Arg Ala Asn  Thr Asn Asn Ala Asn  Ala Asn Val
    1655             1660              1665

Ala Tyr  Ala Asn Ser Asn His  Ser Asn Ser His Val  Phe Ser Ser
    1670             1675              1680

Val His  Tyr Glu Arg Glu Phe  Pro Glu Glu Thr Glu  Thr Pro Ala
    1685             1690              1695

Thr Arg  Gly Arg Ala Leu Gly  Gln Pro Cys Arg Ser  Leu Gly Pro
    1700             1705              1710

His Ser  Lys Pro Cys Val Glu  Met Leu Lys Gly Leu  Leu Thr Gln
    1715             1720              1725

Arg Ala  Met Pro Arg Gly Gln  Ala Pro Pro Ala Pro  Cys Gln Cys
    1730             1735              1740

Pro Arg  Val Glu Ser Ser Met  Pro Glu Asp Arg Lys  Ser Ser Thr
    1745             1750              1755

Pro Gly  Ser Leu His Glu Glu  Thr Pro His Ser Arg  Ser Thr Arg
    1760             1765              1770

Glu Asn  Thr Ser Arg Cys Ser  Ala Pro Ala Thr Ala  Leu Leu Ile
    1775             1780              1785

Gln Lys  Ala Leu Val Arg Gly  Gly Leu Gly Thr Leu  Ala Ala Asp
    1790             1795              1800
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85

Ala Asn Phe Ile Met Ala Thr Gly Gln Ala Leu Gly Asp Ala Cys
    1805   1810   1815

Gln Met Glu Pro Glu Glu Val Glu Ile Met Ala Thr Glu Leu Leu
    1820   1825   1830

Lys Gly Arg Glu Ala Pro Asp Gly Met Ala Ser Ser Leu Gly Cys
    1835   1840   1845

Leu Asn Leu Gly Ser Ser Leu Gly Ser Leu Asp Gln His Gln Gly
    1850   1855   1860

Ser Gln Glu Thr Leu Ile Pro Pro Arg Leu
    1865   1870

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       Xaa is any amino acid

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cgcctcaacg cccagcacag tgccctgcac acagtagtcg ctcaataaat gttcgtggat   120

gatgatgatg atgatgatga aaaaaatgca gcatcaacgg cagcagcaag cggaccacgc   180

gaacgaggca aactatgcaa gaggcaccag acttcctctt tctggtgaag gaccaacttc   240

tcagccgaat agctccaagc aaactgtcct gtcttggcaa gctgcaatcg atgctgctag   300

acaggccaag gctgcccaaa ctatgagcac ctctgcaccc ccacctgtag gatctctctc   360

ccaaagaaaa cgtcagcaat acgccaagag caaaaaacag ggtaactcgt ccaacagccg   420

acctgcccgc gcccttttct gtttatcact caataacccc atccgaagag cctgcattag   480

tatagtggaa tggaaaccat ttgacatatt tatattattg gctattttg ccaattgtgt   540

ggccttagct atttacatcc cattccctga agatgattct aattcaacaa atcataactt   600

ggaaaaagta gaatatgcct tcctgattat ttttacagtc gagacatttt tgaagattat   660

agcgtatgga ttattgctac atcctaatgc ttatgttagg aatggatgga atttactgga   720

ttttgttata gtaatagtag gattgtttag tgtaatttg gaacaattaa ccaaagaaac   780

agaaggcggg aaccactcaa gcggcaaatc tggaggcttt gatgtcaaag ccctccgtgc   840

ctttcgagtg ttgcgaccac ttcgactagt gtcaggagtg cccagtttac aagttgtcct   900

gaactccatt ataaaagcca tggttcccct ccttcacata gcccttttgg tattatttgt   960

aatcataatc tatgctatta taggattgga actttttatt ggaaaaatgc acaaaacatg   1020

ttttttttgct gactcagata tcgtagctga agaggaccca gctccatgtg cgttctcagg   1080

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gaatggacgc cagtgtactg ccaatggcac ggaatgtagg agtggctggg ttggcccgaa    1140

cggaggcatc accaactttg ataactttgc ctttgccatg cttactgtgt ttcagtgcat    1200

caccatggag ggctggacag atgtgctcta ctgggtaaat gatgcgatag gatgggaatg    1260

gccatgggtg tattttgtta gtctgatcat ccttggctca tttttcgtcc ttaacctggc    1320

tcattttcg tccttatcag agaattctca aaggaaagag agaaggcaaa agcacgggga    1380

gatttccaga agctccggga gaagcagcag ctggaggagg atctaaaggg ctacttggat    1440

tggatcaccc aagctgagga catcgatccg gagaatgagg aagaaggagg agaggaaggc    1500

aaacgaaata ctagc atg ccc acc agc gag act gag tct gtg aac aca gag    1551
            Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu
            1               5                   10

aac gtc agc ggt gaa ggc gag aac cga ggc tgc tgt gga agt ctc tgg    1599
Asn Val Ser Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp
    15              20                  25

tgc tgg tgg aga cgg aga ggc gcg gcc aag gcg ggg ccc tct ggg tgt    1647
Cys Trp Trp Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys
    30              35                  40

cgg cgg tgg ggt caa gcc atc tca aaa tcc aaa ctc agc cga cgc tgg    1695
Arg Arg Trp Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp
45              50                  55                  60

cgt cgc tgg aac cga ttc aat cgc aga aga tgt agg gcc gcc gtg aag    1743
Arg Arg Trp Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys
                65                  70                  75

tct gtc acg ttt tac tgg ctg gtt atc gtc ctg gtg ttt ctg aac acc    1791
Ser Val Thr Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr
                80              85                  90

tta acc att tcc tct gag cac tac aat cag cca gat tgg ttg aca cag    1839
Leu Thr Ile Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln
            95                  100                 105

att caa gat atg ccc aac aaa gtc ctc ttg gct ctg ttc acc tgc gag    1887
Ile Gln Asp Met Pro Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu
        110                 115                 120

atg ctg gta aaa atg tac agc ttg ggc ctc caa gca tat ttc gtc tct    1935
Met Leu Val Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser
125                 130                 135                 140

ctt ttc aac cgg ttt gat tgc ttc gtg gtg tgt ggt gga atc act gag    1983
Leu Phe Asn Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu
                145                 150                 155

acg atc ttg gtg gaa ctg gaa atc atg tct ccc ctg ggg atc tct gtg    2031
Thr Ile Leu Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val
            160                 165                 170

ttt cgg tgt gtg cgc ctc tta aga atc ttc aaa gtg acc agg cac tgg    2079
Phe Arg Cys Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp
            175                 180                 185

act tcc ctg agc aac tta gtg gca tcc tta tta aac tcc atg aag tcc    2127
Thr Ser Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser
    190                 195                 200

atc gct tcg ctg ttg ctt ctg ctt ttt ctc ttc att atc atc ttt tcc    2175
Ile Ala Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser
205                 210                 215                 220

ttg ctt ggg atg cag ctg ttt ggc ggc aag ttt aat ttt gat gaa acg    2223
Leu Leu Gly Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr
                225                 230                 235
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87

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caa acc aag cgg agc acc ttt gac aat ttc cct caa gca ctt ctc aca       2271
Gln Thr Lys Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr
            240             245             250

gtg ttc cag atc ctg aca ggc gaa gac tgg aat gct gtg atg tac gat       2319
Val Phe Gln Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp
            255             260             265

ggc atc atg gct tac ggg ggc cca tcc tct tca gga atg atc gtc tgc       2367
Gly Ile Met Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys
    270             275             280

atc tac ttc atc atc ctc ttc att tgt ggt aac tat att cta ctg aat       2415
Ile Tyr Phe Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn
285             290             295             300

gtc ttc ttg gcc atc gct gta gac aat ttg gct gat gct gaa agt ctg       2463
Val Phe Leu Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu
                305             310             315

aac act gct cag aaa gaa gaa gcg gaa gaa aag gag agg aaa aag att       2511
Asn Thr Ala Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile
            320             325             330

gcc aga aaa gag agc cta gaa aat aaa aag aac aac aaa cca gaa gtc       2559
Ala Arg Lys Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val
            335             340             345

aac cag ata gcc aac agt gac aac aag gtt aca att gat gac tat aga       2607
Asn Gln Ile Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg
    350             355             360

gaa gag gat gaa gac aag gac ccc tat ccg cct tgc gat gtg cca ggt       2655
Glu Glu Asp Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Gly
365             370             375             380

atg gtg gnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2703
Met Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            385             390             395

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2751
Xaa Xaa Xaa Xaa Xaa·Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            400             405             410

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2799
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            415             420             425

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2847
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    430             435             440

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2895
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
445             450             455             460

nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn       2943
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            465             470             475

nnn nnn nnn nnn nnn nnn ccc tgc agg atc cgc gta ggc tgc cac aag       2991
Xaa Xaa Xaa Xaa Xaa Xaa Pro Cys Arg Ile Arg Val Gly Cys His Lys
            480             485             490

ctc atc aac cac cac atc ttc acc aac ctc atc ctt gtc ttc atc atg       3039
Leu Ile Asn His His Ile Phe Thr Asn Leu Ile Leu Val Phe Ile Met
            495             500             505

ctg agc agc gct gcc ctg gcc gca gag gac ccc atc cgc agc cac tcc       3087
Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro Ile Arg Ser His Ser
    510             515             520

ttc cgg aac acg ata ctg ggt tac ttt gac tat gcc ttc aca gcc atc       3135
Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr Ala Phe Thr Ala Ile
525             530             535             540
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ttt act gtt gag atc ctg ttg aag atg aca act ttt gga gct ttc ctc      3183
Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr Phe Gly Ala Phe Leu
                545             550             555

cac aaa ggg gcc ttc tgc agg aac tac ttc aat ttg ctg gat atg ctg      3231
His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn Leu Leu Asp Met Leu
                560             565             570

gtg gtt ggg gtg tct ctg gtg tca ttt ggg att caa tcc agt gcc atc      3279
Val Val Gly Val Ser Leu Val Ser Phe Gly Ile Gln Ser Ser Ala Ile
                575             580             585

tcc gtt gtg aag att ctg agg gtc tta agg gtc ctg cgt ccc ctc agg      3327
Ser Val Val Lys Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg
                590             595             600

gcc atc aac aga gca aaa gga ctt aag cac gtg gtc cag tgc gtc ttc      3375
Ala Ile Asn Arg Ala Lys Gly Leu Lys His Val Val Gln Cys Val Phe
605             610             615             620

gtg gcc atc cgg acc atc ggc aac atc atg atc gtc acc acc ctc ctg      3423
Val Ala Ile Arg Thr Ile Gly Asn Ile Met Ile Val Thr Thr Leu Leu
                625             630             635

cag ttc atg ttt gcc tgt atc ggg gtc cag ttg ttc aag ggg aag ttc      3471
Gln Phe Met Phe Ala Cys Ile Gly Val Gln Leu Phe Lys Gly Lys Phe
                640             645             650

tat cgc tgt acg gat gaa gcc aaa agt aac cct gaa gaa tgc agg gga      3519
Tyr Arg Cys Thr Asp Glu Ala Lys Ser Asn Pro Glu Glu Cys Arg Gly
                655             660             665

ctt ttc atc ctc tac aag gat ggg gat gtt gac agt cct gtg gtc cgt      3567
Leu Phe Ile Leu Tyr Lys Asp Gly Asp Val Asp Ser Pro Val Val Arg
                670             675             680

gaa cgg atc tgg caa aac agt gat ttc aac ttc gac aac gtc ctc tct      3615
Glu Arg Ile Trp Gln Asn Ser Asp Phe Asn Phe Asp Asn Val Leu Ser
685             690             695             700

gct atg atg gcg ctc ttc aca gtc tcc acg ttt gag ggc tgg cct gcg      3663
Ala Met Met Ala Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Ala
                705             710             715

ttg ctg tat aaa gcc atc gac tcg aat gga gag aac atc ggc cca atc      3711
Leu Leu Tyr Lys Ala Ile Asp Ser Asn Gly Glu Asn Ile Gly Pro Ile
                720             725             730

tac aac cac cgc gtg gag atc tcc atc ttc ttc atc atc tac atc atc      3759
Tyr Asn His Arg Val Glu Ile Ser Ile Phe Phe Ile Ile Tyr Ile Ile
                735             740             745

att gta gct ttc ttc atg atg aac atc ttt gtg ggc ttt gtc atc gtt      3807
Ile Val Ala Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val
                750             755             760

aca ttt cag gaa caa gga gaa aaa gag tat aag aac tgt gag ctg gac      3855
Thr Phe Gln Glu Gln Gly Glu Lys Glu Tyr Lys Asn Cys Glu Leu Asp
765             770             775             780

aaa aat cag cgt cag tgt gtt gaa tac gcc ttg aaa gca cgt ccc ttg      3903
Lys Asn Gln Arg Gln Cys Val Glu Tyr Ala Leu Lys Ala Arg Pro Leu
                785             790             795

cgg aga tac atc ccc aaa aac ccc tac cag tac aag ttc tgg tac gtg      3951
Arg Arg Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Lys Phe Trp Tyr Val
                800             805             810

gtg aac tct tcg cct ttc gaa tac atg atg ttt gtc ctc atc atg ctc      3999
Val Asn Ser Ser Pro Phe Glu Tyr Met Met Phe Val Leu Ile Met Leu
                815             820             825

aac aca ctc tgc ttg gcc atg cag cac tac gag cag tcc aag atg ttc      4047
Asn Thr Leu Cys Leu Ala Met Gln His Tyr Glu Gln Ser Lys Met Phe
                830             835             840
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aat gat gcc atg gac att ctg aac atg gtc ttc acc ggg gtg ttc acc       4095
Asn Asp Ala Met Asp Ile Leu Asn Met Val Phe Thr Gly Val Phe Thr
845             850                 855                 860

gtc gag atg gtt ttg aaa gtc atc gca ttt aag cct aag ggg tat ttt       4143
Val Glu Met Val Leu Lys Val Ile Ala Phe Lys Pro Lys Gly Tyr Phe
                865                 870                 875

agt gac gcc tgg aac acg ttt gac tcc ctc atc gta atc ggc agc att       4191
Ser Asp Ala Trp Asn Thr Phe Asp Ser Leu Ile Val Ile Gly Ser Ile
                880                 885                 890

ata gac gtg gcc ctc agc gaa gca aag cca act gaa agt gaa aat gtc       4239
Ile Asp Val Ala Leu Ser Glu Ala Lys Pro Thr Glu Ser Glu Asn Val
                895                 900                 905

cct gtc cca act gct aca cct ggg aac tct gaa gag agc aat aga atc       4287
Pro Val Pro Thr Ala Thr Pro Gly Asn Ser Glu Glu Ser Asn Arg Ile
        910                 915                 920

tcc atc acc ttt ttc cgt ctt ttc cga gtg atg cga ttg gtg aag ctt       4335
Ser Ile Thr Phe Phe Arg Leu Phe Arg Val Met Arg Leu Val Lys Leu
925                 930                 935                 940

ctc agc agg ggg gaa ggc atc cgg aca ttg ctg tgg act ttt att aag       4383
Leu Ser Arg Gly Glu Gly Ile Arg Thr Leu Leu Trp Thr Phe Ile Lys
                945                 950                 955

tcc ttt cag gcg ctc ccg tat gtg gcc ctc ctc ata gcc atg ctg ttc       4431
Ser Phe Gln Ala Leu Pro Tyr Val Ala Leu Leu Ile Ala Met Leu Phe
                960                 965                 970

ttc atc tat gcg gtc att ggc atg cag atg ttt ggg aaa gtt gcc atg       4479
Phe Ile Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys Val Ala Met
                975                 980                 985

aga gat aac aac cag atc aat agg aac aat aac ttc  cag acg ttt ccc      4527
Arg Asp Asn Asn Gln Ile Asn Arg Asn Asn Asn Phe  Gln Thr Phe Pro
        990                 995                 1000

cag  gcg gtg ctg ctg ctc  ttc agg tgt gca aca  ggt gag gcc tgg        4572
Gln  Ala Val Leu Leu Leu  Phe Arg Cys Ala Thr  Gly Glu Ala Trp
1005                 1010                 1015

cag  gag atc atg ctg gcc  tgt ctc cca ggg aag  ctc tgt gac cct        4617
Gln  Glu Ile Met Leu Ala  Cys Leu Pro Gly Lys  Leu Cys Asp Pro
1020                 1025                 1030

gag  tca gat tac aac ccc  ggg gag gag tat aca  tgt ggg agc aac        4662
Glu  Ser Asp Tyr Asn Pro  Gly Glu Glu Tyr Thr  Cys Gly Ser Asn
1035                 1040                 1045

ttt  gcc att gtc tat ttc  atc agt ttt tac atg  ctc tgt gca ttt        4707
Phe  Ala Ile Val Tyr Phe  Ile Ser Phe Tyr Met  Leu Cys Ala Phe
1050                 1055                 1060

ctg  atc atc aat ctg ttt  gtg gct gtc atc atg  gat aat ttc gac        4752
Leu  Ile Ile Asn Leu Phe  Val Ala Val Ile Met  Asp Asn Phe Asp
1065                 1070                 1075

tat  ctg acc cgg gac tgg  tct att ttg ggg cct  cac cat tta gat        4797
Tyr  Leu Thr Arg Asp Trp  Ser Ile Leu Gly Pro  His His Leu Asp
1080                 1085                 1090

gaa  ttc aaa aga ata tgg  tca gaa tat gac cct  gag gca aag gga        4842
Glu  Phe Lys Arg Ile Trp  Ser Glu Tyr Asp Pro  Glu Ala Lys Gly
1095                 1100                 1105

agg  ata aaa cac ctt gat  gtg gtc act ctg ctt  cga cgc atc cag        4887
Arg  Ile Lys His Leu Asp  Val Val Thr Leu Leu  Arg Arg Ile Gln
1110                 1115                 1120

cct  ccc ctg ggg ttt ggg  aag tta tgt cca cac  agg gta gcg tgc        4932
Pro  Pro Leu Gly Phe Gly  Lys Leu Cys Pro His  Arg Val Ala Cys
1125                 1130                 1135
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90

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aag aga tta gtt gcc atg   aac atg cct ctc aac   agt gac ggg aca        4977
Lys Arg Leu Val Ala Met   Asn Met Pro Leu Asn   Ser Asp Gly Thr
1140            1145                 1150

gtc atg ttt aat gca acc   ctg ttt gct ttg gtt   cga acg gct ctt        5022
Val Met Phe Asn Ala Thr   Leu Phe Ala Leu Val   Arg Thr Ala Leu
1155            1160                 1165

aag atc aag acc gaa ggg   aac ctg gag caa gct   aat gaa gaa ctt        5067
Lys Ile Lys Thr Glu Gly   Asn Leu Glu Gln Ala   Asn Glu Glu Leu
1170            1175                 1180

cgg gct gtg ata aag aaa   att tgg aag aaa acc   agc atg aaa tta        5112
Arg Ala Val Ile Lys Lys   Ile Trp Lys Lys Thr   Ser Met Lys Leu
1185            1190                 1195

ctt gac caa gtt gtc cct   cca gct ggt gat gat   gag gta acc gtg        5157
Leu Asp Gln Val Val Pro   Pro Ala Gly Asp Asp   Glu Val Thr Val
1200            1205                 1210

ggg aag ttc tat gcc act   ttc ctg ata cag gac   tac ttt agg aaa        5202
Gly Lys Phe Tyr Ala Thr   Phe Leu Ile Gln Asp   Tyr Phe Arg Lys
1215            1220                 1225

ttc aag aaa cgg aaa gaa   caa gga ctg gtg gga   aag tac cct gcg        5247
Phe Lys Lys Arg Lys Glu   Gln Gly Leu Val Gly   Lys Tyr Pro Ala
1230            1235                 1240

aag aac acc aca att gcc   cta cag gcg gga tta   agg aca ctg cat        5292
Lys Asn Thr Thr Ile Ala   Leu Gln Ala Gly Leu   Arg Thr Leu His
1245            1250                 1255

gac att ggg cca gaa atc   cgg cgt gct ata tcg   tgt gat ttg caa        5337
Asp Ile Gly Pro Glu Ile   Arg Arg Ala Ile Ser   Cys Asp Leu Gln
1260            1265                 1270

gat gac gag cct gag gaa   aca aaa cga gaa gaa   gaa gat gat gtg        5382
Asp Asp Glu Pro Glu Glu   Thr Lys Arg Glu Glu   Glu Asp Asp Val
1275            1280                 1285

ttc aaa aga aat ggt gcc   ctg ctt gga aac cat   gtc aat cat gtt        5427
Phe Lys Arg Asn Gly Ala   Leu Leu Gly Asn His   Val Asn His Val
1290            1295                 1300

aat agt gat agg aga gat   tcc ctt cag cag acc   aat acc acc cac        5472
Asn Ser Asp Arg Arg Asp   Ser Leu Gln Gln Thr   Asn Thr Thr His
1305            1310                 1315

cgt ccc ctg cat gtc caa   agg cct tca att cca   cct gca agt gat        5517
Arg Pro Leu His Val Gln   Arg Pro Ser Ile Pro   Pro Ala Ser Asp
1320            1325                 1330

act gag aaa ccg ctg ttt   cct cca gca gga aat   tcg gtg tgt cat        5562
Thr Glu Lys Pro Leu Phe   Pro Pro Ala Gly Asn   Ser Val Cys His
1335            1340                 1345

aac cat cat aac cat aat   tcc ata gga aag caa   gtt ccc acc tca        5607
Asn His His Asn His Asn   Ser Ile Gly Lys Gln   Val Pro Thr Ser
1350            1355                 1360

aca aat gcc aat ctc aat   aat gcc aat atg tcc   aaa gct gcc cat        5652
Thr Asn Ala Asn Leu Asn   Asn Ala Asn Met Ser   Lys Ala Ala His
1365            1370                 1375

gga aag cgg ccc agc att   ggg aac ctt gag cat   gtg tct gaa aat        5697
Gly Lys Arg Pro Ser Ile   Gly Asn Leu Glu His   Val Ser Glu Asn
1380            1385                 1390

ggg cat cat tct tcc cac   aag cat gac cgg gag   cct cag aga agg        5742
Gly His His Ser Ser His   Lys His Asp Arg Glu   Pro Gln Arg Arg
1395            1400                 1405

tcc agt gtg aaa aga acc   cgc tat tat gaa act   tac att agg tcc        5787
Ser Ser Val Lys Arg Thr   Arg Tyr Tyr Glu Thr   Tyr Ile Arg Ser
1410            1415                 1420
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gac  tca gga gat gaa cag  ctc cca act att tgc  cgg gaa gac cca      5832
Asp  Ser Gly Asp Glu Gln  Leu Pro Thr Ile Cys  Arg Glu Asp Pro
1425                 1430                  1435

gag  ata cat ggc tat ttc  agg gac ccc cac tgc  ttg ggg gag cag      5877
Glu  Ile His Gly Tyr Phe  Arg Asp Pro His Cys  Leu Gly Glu Gln
1440                 1445                  1450

gag  tat ttc agt agt gag  gaa tgc tac gag gat  gac agc tcg ccc      5922
Glu  Tyr Phe Ser Ser Glu  Glu Cys Tyr Glu Asp  Asp Ser Ser Pro
1455                 1460                  1465

acc  tgg agc agg caa aac  tat ggc tac tac agc  aga tac cca ggc      5967
Thr  Trp Ser Arg Gln Asn  Tyr Gly Tyr Tyr Ser  Arg Tyr Pro Gly
1470                 1475                  1480

aga  aac atc gac tct gag  agg ccc cga ggc tac  cat cat ccc caa      6012
Arg  Asn Ile Asp Ser Glu  Arg Pro Arg Gly Tyr  His His Pro Gln
1485                 1490                  1495

gga  ttc ttg gag gac gat  gac tcg ccc gtt tgc  tat gat tca cgg      6057
Gly  Phe Leu Glu Asp Asp  Asp Ser Pro Val Cys  Tyr Asp Ser Arg
1500                 1505                  1510

aga  tct cca agg aga cgc  cta cta cct ccc acc  cca gca tcc cac      6102
Arg  Ser Pro Arg Arg Arg  Leu Leu Pro Pro Thr  Pro Ala Ser His
1515                 1520                  1525

cgg  aga tcc tcc ttc aac  ttt gag tgc ctg cgc  cgg cag agc agc      6147
Arg  Arg Ser Ser Phe Asn  Phe Glu Cys Leu Arg  Arg Gln Ser Ser
1530                 1535                  1540

cag  gaa gag gtc ccg tcg  tct ccc atc ttc ccc  cat cgc acg gcc      6192
Gln  Glu Glu Val Pro Ser  Ser Pro Ile Phe Pro  His Arg Thr Ala
1545                 1550                  1555

ctg  cct ctg cat cta atg  cag caa cag atc atg  gca gtt gcc ggc      6237
Leu  Pro Leu His Leu Met  Gln Gln Gln Ile Met  Ala Val Ala Gly
1560                 1565                  1570

cta  gat tca agt aaa gcc  cag aag tac tca ccg  agt cac tcg acc      6282
Leu  Asp Ser Ser Lys Ala  Gln Lys Tyr Ser Pro  Ser His Ser Thr
1575                 1580                  1585

cgg  tcg tgg gcc acc cct  cca gca acc cct ccc  tac cgg gac tgg      6327
Arg  Ser Trp Ala Thr Pro  Pro Ala Thr Pro Pro  Tyr Arg Asp Trp
1590                 1595                  1600

aca  ccg tgc tac acc ccc  ctg atc caa gtg gag  cag tca gag gcc      6372
Thr  Pro Cys Tyr Thr Pro  Leu Ile Gln Val Glu  Gln Ser Glu Ala
1605                 1610                  1615

ctg  gac cag gtg aac ggc  agc ctg ccg tcc ctg  cac cgc agc tcc      6417
Leu  Asp Gln Val Asn Gly  Ser Leu Pro Ser Leu  His Arg Ser Ser
1620                 1625                  1630

tgg  tac aca gac gag ccc  gac atc tcc tac cgg  act ttc aca cca      6462
Trp  Tyr Thr Asp Glu Pro  Asp Ile Ser Tyr Arg  Thr Phe Thr Pro
1635                 1640                  1645

gcc  agc ctg act gtc ccc  agc agc ttc cgg aac  aaa aac agc gac      6507
Ala  Ser Leu Thr Val Pro  Ser Ser Phe Arg Asn  Lys Asn Ser Asp
1650                 1655                  1660

aag  cag agg agt gcg gac  agc ttg gtg gag gca  gtc ctg ata tcc      6552
Lys  Gln Arg Ser Ala Asp  Ser Leu Val Glu Ala  Val Leu Ile Ser
1665                 1670                  1675

gaa  ggc ttg gga cgc tat  gca agg gac cca aaa  ttt gtg tca gca      6597
Glu  Gly Leu Gly Arg Tyr  Ala Arg Asp Pro Lys  Phe Val Ser Ala
1680                 1685                  1690

aca  aaa cac gaa atc gct  gat gcc tgt gac ctc  acc atc gac gag      6642
Thr  Lys His Glu Ile Ala  Asp Ala Cys Asp Leu  Thr Ile Asp Glu
1695                 1700                  1705
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atg  gag  agt  gca  gcc  agc  acc  ctg  ctt  aat  ggg  aac  gtg  cgt  ccc        6687
Met  Glu  Ser  Ala  Ala  Ser  Thr  Leu  Leu  Asn  Gly  Asn  Val  Arg  Pro
1710                1715                     1720

cga  gcc  aac  ggg  gat  gtg  ggc  ccc  ctc  tca  cac  cgg  cag  gac  tat        6732
Arg  Ala  Asn  Gly  Asp  Val  Gly  Pro  Leu  Ser  His  Arg  Gln  Asp  Tyr
1725                1730                     1735

gag  cta  cag  gac  ttt  ggt  cct  ggc  tac  agc  gac  gaa  gag  cca  gac        6777
Glu  Leu  Gln  Asp  Phe  Gly  Pro  Gly  Tyr  Ser  Asp  Glu  Glu  Pro  Asp
1740                1745                     1750

cct  ggg  agg  gat  gag  gag  gac  ctg  gcg  gat  gaa  atg  ata  tgc  atc        6822
Pro  Gly  Arg  Asp  Glu  Glu  Asp  Leu  Ala  Asp  Glu  Met  Ile  Cys  Ile
1755                1760                     1765

acc  acc  ttg  tag  cccccagcga  ggggcagact  ggctctggcc  tcaggtgggg              6874
Thr  Thr  Leu
1770

cgcaggagag  ccaggggaaa  agtgcctcat  agttaggaaa  gtttaggcac  tagttgggag          6934

taatattcaa  ttaattagac  ttttgtataa  gagatgtcat  gcctcaagaa  agccataaac          6994

ctggtaggaa  caggtcccaa  gcggttgagc  ctggcagagt  accatgcgct  cggccccagc          7054

tgcaggaaac  agcaggcccc  gccctctcac  agaggatggg  tgaggaggcc  agacctgccc          7114

tgccccattg  tccagatggg  cactgctgtg  gagtctgctt  ctcccatgta  ccagggcacc          7174

aggcccaccc  aactgaaggc  atggcggcgg  ggtgcagggg  aaagttaaag  gtgatgacga          7234

tcatcacacc  tgtgtcgtta  cctcagccat  cggtctagca  tatcagtcac  tgggcccaac          7294

atatccattt  ttaaacccctt  tcccccaaat  acactgcgtc  ctggttcctg  tttagctgtt         7354

ctgaaata                                                                       7362


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<222>  (383)..(383)
<223>  The 'Xaa' at location 383 stands for Glu, Asp, Gly, Ala, or Val.

<220>
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<222>  (384)..(384)
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<223>  The 'Xaa' at location 406 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 407 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<222>  (408)..(408)
<223>  The 'Xaa' at location 408 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.
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<220>
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<222>  (409)..(409)
<223>  The 'Xaa' at location 409 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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       Tyr, Trp, Cys, or Phe.


<220>
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<222>  (410)..(410)
<223>  The 'Xaa' at location 410 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>  (411)..(411)
<223>  The 'Xaa' at location 411 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>  (412)..(412)
<223>  The 'Xaa' at location 412 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 413 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 414 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 416 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 417 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 418 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 419 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 420 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 421 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 423 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 426 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 427 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 428 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 429 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>   (430)..(430)
<223>   The 'Xaa' at location 430 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 431 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 432 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 433 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 434 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 439 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>  (441)..(441)
<223>  The 'Xaa' at location 441 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 442 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 443 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 444 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 448 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 450 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 451 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 452 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
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<223>  The 'Xaa' at location 453 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 454 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 455 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 456 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 457 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 458 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 460 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>   The 'Xaa' at location 469 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<222>   (474)..(474)
<223>   The 'Xaa' at location 474 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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        Tyr, Trp, Cys, or Phe.
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<220>
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<223>  The 'Xaa' at location 475 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 476 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 477 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 478 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 480 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<223>  The 'Xaa' at location 482 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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<220>
<221>  misc_feature
<222>  (1516)..(6834)
<223>  n is dATP, dCTP, dGTP, or dTTP; Xaa is any amino acid


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1               5                   10                  15


Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp Arg
            20                  25                  30


Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp Gly
        35                  40                  45
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Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp Asn
    50                  55                  60

Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr Phe
65                  70                  75                  80

Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile Ser
                85                  90                  95

Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp Met
            100                 105                 110

Pro Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val Lys
            115                 120                 125

Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn Arg
    130                 135                 140

Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu Val
145                 150                 155                 160

Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys Val
                165                 170                 175

Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu Ser
            180                 185                 190

Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser Leu
    195                 200                 205

Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly Met
    210                 215                 220

Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys Arg
225                 230                 235                 240

Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln Ile
                245                 250                 255

Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met Ala
            260                 265                 270

Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe Ile
            275                 280                 285

Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala
    290                 295                 300

Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala Gln
305                 310                 315                 320

Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys Glu
            325                 330                 335

Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile Ala
    340                 345                 350
```

103

Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp Glu
    355   360   365

Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Gly Met Val Xaa Xaa
    370   375   380

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
385   390   395   400

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            405   410   415

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            420   425   430

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            435   440   445

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            450   455   460

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
465   470   475   480

Xaa Xaa Pro Cys Arg Ile Arg Val Gly Cys His Lys Leu Ile Asn His
            485   490   495

His Ile Phe Thr Asn Leu Ile Leu Val Phe Ile Met Leu Ser Ser Ala
            500   505   510

Ala Leu Ala Ala Glu Asp Pro Ile Arg Ser His Ser Phe Arg Asn Thr
            515   520   525

Ile Leu Gly Tyr Phe Asp Tyr Ala Phe Thr Ala Ile Phe Thr Val Glu
    530   535   540

Ile Leu Leu Lys Met Thr Thr Phe Gly Ala Phe Leu His Lys Gly Ala
545   550   555   560

Phe Cys Arg Asn Tyr Phe Asn Leu Leu Asp Met Leu Val Val Gly Val
            565   570   575

Ser Leu Val Ser Phe Gly Ile Gln Ser Ser Ala Ile Ser Val Val Lys
            580   585   590

Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg
            595   600   605

Ala Lys Gly Leu Lys His Val Val Gln Cys Val Phe Val Ala Ile Arg
    610   615   620

Thr Ile Gly Asn Ile Met Ile Val Thr Thr Leu Leu Gln Phe Met Phe
625   630   635   640

Ala Cys Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Tyr Arg Cys Thr
                645   650   655

104

Asp Glu Ala Lys Ser Asn Pro Glu Glu Cys Arg Gly Leu Phe Ile Leu
        660   665   670

Tyr Lys Asp Gly Asp Val Asp Ser Pro Val Val Arg Glu Arg Ile Trp
        675   680   685

Gln Asn Ser Asp Phe Asn Phe Asp Asn Val Leu Ser Ala Met Met Ala
    690   695   700

Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Ala Leu Leu Tyr Lys
705   710   715   720

Ala Ile Asp Ser Asn Gly Glu Asn Ile Gly Pro Ile Tyr Asn His Arg
            725   730   735

Val Glu Ile Ser Ile Phe Phe Ile Ile Tyr Ile Ile Ile Val Ala Phe
            740   745   750

Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr Phe Gln Glu
        755   760   765

Gln Gly Glu Lys Glu Tyr Lys Asn Cys Glu Leu Asp Lys Asn Gln Arg
    770   775   780

Gln Cys Val Glu Tyr Ala Leu Lys Ala Arg Pro Leu Arg Arg Tyr Ile
785   790   795   800

Pro Lys Asn Pro Tyr Gln Tyr Lys Phe Trp Tyr Val Val Asn Ser Ser
            805   810   815

Pro Phe Glu Tyr Met Met Phe Val Leu Ile Met Leu Asn Thr Leu Cys
            820   825   830

Leu Ala Met Gln His Tyr Glu Gln Ser Lys Met Phe Asn Asp Ala Met
        835   840   845

Asp Ile Leu Asn Met Val Phe Thr Gly Val Phe Thr Val Glu Met Val
    850   855   860

Leu Lys Val Ile Ala Phe Lys Pro Lys Gly Tyr Phe Ser Asp Ala Trp
865   870   875   880

Asn Thr Phe Asp Ser Leu Ile Val Ile Gly Ser Ile Ile Asp Val Ala
            885   890   895

Leu Ser Glu Ala Lys Pro Thr Glu Ser Glu Asn Val Pro Val Pro Thr
            900   905   910

Ala Thr Pro Gly Asn Ser Glu Glu Ser Asn Arg Ile Ser Ile Thr Phe
        915   920   925

Phe Arg Leu Phe Arg Val Met Arg Leu Val Lys Leu Leu Ser Arg Gly
    930   935   940

Glu Gly Ile Arg Thr Leu Leu Trp Thr Phe Ile Lys Ser Phe Gln Ala
945   950   955   960

Leu Pro Tyr Val Ala Leu Leu Ile Ala Met Leu Phe Phe Ile Tyr Ala
        965   970   975

Val Ile Gly Met Gln Met Phe Gly Lys Val Ala Met Arg Asp Asn Asn
        980   985   990

Gln Ile Asn Arg Asn Asn Asn Phe Gln Thr Phe Pro Gln Ala Val Leu
        995   1000   1005

Leu Leu Phe Arg Cys Ala Thr Gly Glu Ala Trp Gln Glu Ile Met
   1010   1015   1020

Leu Ala Cys Leu Pro Gly Lys Leu Cys Asp Pro Glu Ser Asp Tyr
   1025   1030   1035

Asn Pro Gly Glu Glu Tyr Thr Cys Gly Ser Asn Phe Ala Ile Val
   1040   1045   1050

Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe Leu Ile Ile Asn
   1055   1060   1065

Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu Thr Arg
   1070   1075   1080

Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe Lys Arg
   1085   1090   1095

Ile Trp Ser Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile Lys His
   1100   1105   1110

Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro Leu Gly
   1115   1120   1125

Phe Gly Lys Leu Cys Pro His Arg Val Ala Cys Lys Arg Leu Val
   1130   1135   1140

Ala Met Asn Met Pro Leu Asn Ser Asp Gly Thr Val Met Phe Asn
   1145   1150   1155

Ala Thr Leu Phe Ala Leu Val Arg Thr Ala Leu Lys Ile Lys Thr
   1160   1165   1170

Glu Gly Asn Leu Glu Gln Ala Asn Glu Glu Leu Arg Ala Val Ile
   1175   1180   1185

Lys Lys Ile Trp Lys Lys Thr Ser Met Lys Leu Leu Asp Gln Val
   1190   1195   1200

Val Pro Pro Ala Gly Asp Asp Glu Val Thr Val Gly Lys Phe Tyr
   1205   1210   1215

Ala Thr Phe Leu Ile Gln Asp Tyr Phe Arg Lys Phe Lys Lys Arg
   1220   1225   1230

Lys Glu Gln Gly Leu Val Gly Lys Tyr Pro Ala Lys Asn Thr Thr
   1235   1240   1245

106

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Ile Ala  Leu Gln Ala Gly Leu  Arg Thr Leu His Asp  Ile Gly Pro
    1250              1255              1260

Glu Ile  Arg Arg Ala Ile Ser  Cys Asp Leu Gln Asp  Asp Glu Pro
    1265              1270              1275

Glu Glu  Thr Lys Arg Glu Glu  Glu Asp Asp Val Phe  Lys Arg Asn
    1280              1285              1290

Gly Ala  Leu Leu Gly Asn His  Val Asn His Val Asn  Ser Asp Arg
    1295              1300              1305

Arg Asp  Ser Leu Gln Gln Thr  Asn Thr Thr His Arg  Pro Leu His
    1310              1315              1320

Val Gln  Arg Pro Ser Ile Pro  Pro Ala Ser Asp Thr  Glu Lys Pro
    1325              1330              1335

Leu Phe  Pro Pro Ala Gly Asn  Ser Val Cys His Asn  His His Asn
    1340              1345              1350

His Asn  Ser Ile Gly Lys Gln  Val Pro Thr Ser Thr  Asn Ala Asn
    1355              1360              1365

Leu Asn  Asn Ala Asn Met Ser  Lys Ala Ala His Gly  Lys Arg Pro
    1370              1375              1380

Ser Ile  Gly Asn Leu Glu His  Val Ser Glu Asn Gly  His His Ser
    1385              1390              1395

Ser His  Lys His Asp Arg Glu  Pro Gln Arg Arg Ser  Ser Val Lys
    1400              1405              1410

Arg Thr  Arg Tyr Tyr Glu Thr  Tyr Ile Arg Ser Asp  Ser Gly Asp
    1415              1420              1425

Glu Gln  Leu Pro Thr Ile Cys  Arg Glu Asp Pro Glu  Ile His Gly
    1430              1435              1440

Tyr Phe  Arg Asp Pro His Cys  Leu Gly Glu Gln Glu  Tyr Phe Ser
    1445              1450              1455

Ser Glu  Glu Cys Tyr Glu Asp  Asp Ser Ser Pro Thr  Trp Ser Arg
    1460              1465              1470

Gln Asn  Tyr Gly Tyr Tyr Ser  Arg Tyr Pro Gly Arg  Asn Ile Asp
    1475              1480              1485

Ser Glu  Arg Pro Arg Gly Tyr  His His Pro Gln Gly  Phe Leu Glu
    1490              1495              1500

Asp Asp  Asp Ser Pro Val Cys  Tyr Asp Ser Arg Arg  Ser Pro Arg
    1505              1510              1515

Arg Arg  Leu Leu Pro Pro Thr  Pro Ala Ser His Arg  Arg Ser Ser
    1520              1525              1530
```

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Phe Asn   Phe Glu Cys Leu Arg   Arg Gln Ser Ser Gln   Glu Glu Val
    1535              1540                1545

Pro Ser   Ser Pro Ile Phe Pro   His Arg Thr Ala Leu   Pro Leu His
    1550              1555                1560

Leu Met   Gln Gln Gln Ile Met   Ala Val Ala Gly Leu   Asp Ser Ser
    1565              1570                1575

Lys Ala   Gln Lys Tyr Ser Pro   Ser His Ser Thr Arg   Ser Trp Ala
    1580              1585                1590

Thr Pro   Pro Ala Thr Pro Pro   Tyr Arg Asp Trp Thr   Pro Cys Tyr
    1595              1600                1605

Thr Pro   Leu Ile Gln Val Glu   Gln Ser Glu Ala Leu   Asp Gln Val
    1610              1615                1620

Asn Gly   Ser Leu Pro Ser Leu   His Arg Ser Ser Trp   Tyr Thr Asp
    1625              1630                1635

Glu Pro   Asp Ile Ser Tyr Arg   Thr Phe Thr Pro Ala   Ser Leu Thr
    1640              1645                1650

Val Pro   Ser Ser Phe Arg Asn   Lys Asn Ser Asp Lys   Gln Arg Ser
    1655              1660                1665

Ala Asp   Ser Leu Val Glu Ala   Val Leu Ile Ser Glu   Gly Leu Gly
    1670              1675                1680

Arg Tyr   Ala Arg Asp Pro Lys   Phe Val Ser Ala Thr   Lys His Glu
    1685              1690                1695

Ile Ala   Asp Ala Cys Asp Leu   Thr Ile Asp Glu Met   Glu Ser Ala
    1700              1705                1710

Ala Ser   Thr· Leu Leu Asn Gly   Asn Val Arg Pro Arg   Ala Asn Gly
    1715              1720                1725

Asp Val   Gly Pro Leu Ser His   Arg Gln Asp Tyr Glu   Leu Gln Asp
    1730              1735                1740

Phe Gly   Pro Gly Tyr Ser Asp   Glu Glu Pro Asp Pro   Gly Arg Asp
    1745              1750                1755

Glu Glu   Asp Leu Ala Asp Glu   Met Ile Cys Ile Thr   Thr Leu
    1760              1765                1770
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108

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cgcctcaacg cccagcacag tgccctgcac acagtagtcg ctcaataaat gttcgtgg       118

atg atg atg atg atg atg atg aaa aaa atg cag cat caa cgg cag cag      166
Met Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1               5                   10                  15

caa gcg gac cac gcg aac gag gca aac tat gca aga ggc acc aga ctt      214
Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
                20                  25                  30

cct ctt tct ggt gaa gga cca act tct cag ccg aat agc tcc aag caa      262
Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
            35                  40                  45

act gtc ctg tct tgg caa gct gca atc gat gct gct aga cag gcc aag      310
Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
        50                  55                  60

gct gcc caa act atg agc acc tct gca ccc cca cct gta gga tct ctc      358
Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
65                  70                  75                  80

tcc caa aga aaa cgt cag caa tac gcc aag agc aaa aaa cag ggt aac      406
Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85                  90                  95

tcg tcc aac agc cga cct gcc cgc gcc ctt ttc tgt tta tca ctc aat      454
Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
            100                 105                 110

aac ccc atc cga aga gcc tgc att agt ata gtg gaa tgg aaa cca ttt      502
Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
        115                 120                 125

gac ata ttt ata tta ttg gct att ttt gcc aat tgt gtg gcc tta gct      550
Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
    130                 135                 140

att tac atc cca ttc cct gaa gat gat tct aat tca aca aat cat aac      598
Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145                 150                 155                 160

ttg gaa aaa gta gaa tat gcc ttc ctg att att ttt aca gtc gag aca      646
Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
                165                 170                 175

ttt ttg aag att ata gcg tat gga tta ttg cta cat cct aat gct tat      694
Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180                 185                 190

gtt agg aat gga tgg aat tta ctg gat ttt gtt ata gta ata gta gga      742
Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
        195                 200                 205

ttg ttt agt gta att ttg gaa caa tta acc aaa gaa aca gaa ggc ggg      790
Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
    210                 215                 220

aac cac tca agc ggc aaa tct gga ggc ttt gat gtc aaa gcc ctc cgt      838
Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225                 230                 235                 240

gcc ttt cga gtg ttg cga cca ctt cga cta gtg tca ggg gtg ccc agt      886
Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
                245                 250                 255
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109

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tta caa gtt gtc ctg aac tcc att ata aaa gcc atg gtt ccc ctc ctt     934
Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260                 265                 270

cac ata gcc ctt ttg gta tta ttt gta atc ata atc tat gct att ata     982
His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
            275                 280                 285

gga ttg gaa ctt ttt att gga aaa atg cac aaa aca tgt ttt ttt gct    1030
Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
            290                 295                 300

gac tca gat atc gta gct gaa gag gac cca gct cca tgt gcg ttc tca    1078
Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305                 310                 315                 320

ggg aat gga cgc cag tgt act gcc aat ggc acg gaa tgt agg agt ggc    1126
Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
                325                 330                 335

tgg gtt ggc ccg aac gga ggc atc acc aac ttt gat aac ttt gcc ttt    1174
Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
            340                 345                 350

gcc atg ctt act gtg ttt cag tgc atc acc atg gag ggc tgg aca gac    1222
Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
            355                 360                 365

gtg ctc tac tgg gta aat gat gcg ata gga tgg gaa tgg cca tgg gtg    1270
Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
            370                 375                 380

tat ttt gtt agt ctg atc atc ctt ggc tca ttt ttc gtc ctt aac ctg    1318
Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385                 390                 395                 400

gtt ctt ggt gtc ctt agt gga gaa ttc tca aag gaa aga gag aag gca    1366
Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
                405                 410                 415

aaa gca cgg gga gat ttc cag aag ctc cgg gag aag cag cag ctg gag    1414
Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
                420                 425                 430

gag gat cta aag ggc tac ttg gat tgg atc acc caa gct gag gac atc    1462
Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
            435                 440                 445

gat ccg gag aat gag gaa gaa gga gga gag gaa ggc aaa cga aat act    1510
Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
            450                 455                 460

agc atg ccc acc agc gag act gag tct gtg aac aca gag aac gtc agc    1558
Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465                 470                 475                 480

ggt gaa ggc gag aac cga ggc tgc tgt gga agt ctc tgg tgc tgg tgg    1606
Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
                485                 490                 495

aga cgg aga ggc gcg gcc aag gcg ggg ccc tct ggg tgt cgg cgg tgg    1654
Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
                500                 505                 510

ggt caa gcc atc tca aaa tcc aaa ctc agc cga cgc tgg cgt cgc tgg    1702
Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
            515                 520                 525

aac cga ttc aat cgc aga aga tgt agg gcc gcc gtg aag tct gtc acg    1750
Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
            530                 535                 540

ttt tac tgg ctg gtt atc gtc ctg gtg ttt ctg aac acc tta acc att    1798
Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545                 550                 555                 560
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110

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tcc tct gag cac tac aat cag cca gat tgg ttg aca cag att caa gat       1846
Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
            565             570             575

att gcc aac aaa gtc ctc ttg gct ctg ttc acc tgc gag atg ctg gta       1894
Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
            580             585             590

aaa atg tac agc ttg ggc ctc caa gca tat ttc gtc tct ctt ttc aac       1942
Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
            595             600             605

cgg ttt gat tgc ttc gtg gtg tgt ggt gga atc act gag acg atc ctg       1990
Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
            610             615             620

gtg gaa ctg gaa atc atg tct ccc ctg ggg atc tct gtg ttt cgg tgt       2038
Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625             630             635             640

gtg cgc ctc tta aga atc ttc aaa gtg acc agg cac tgg act tcc ctg       2086
Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
            645             650             655

agc aac tta gtg gca tcc tta tta aac tcc atg aag tcc atc gct tcg       2134
Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
            660             665             670

ctg ttg ctt ctg ctt ttt ctc ttc att atc atc ttt tcc ttg ctt ggg       2182
Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
            675             680             685

atg cag ctg ttt ggc ggc aag ttt aat ttt gat gaa acg caa acc aag       2230
Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
            690             695             700

cgg agc acc ttt gac aat ttc cct caa gca ctt ctc aca gtg ttc cag       2278
Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705             710             715             720

atc ctg aca ggc gaa gac tgg aat gct gtg atg tac gat ggc atc atg       2326
Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
            725             730             735

gct tac ggg ggc cca tcc tct tca gga atg atc gtc tgc atc tac ttc       2374
Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
            740             745             750

atc atc ctc ttc att tgt ggt aac tat att cta ctg aat gtc ttc ttg       2422
Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
            755             760             765

gcc atc gct gta gac aat ttg gct gat gct gaa agt ctg aac act gct       2470
Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
            770             775             780

cag aaa gaa gaa gcg gaa gaa aag gag agg aaa aag att gcc aga aaa       2518
Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785             790             795             800

gag agc cta gaa aat aaa aag aac aac aaa cca gaa gtc aac cag ata       2566
Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
            805             810             815

gcc aac agt gac aac aag gtt aca att gat gac tat aga gaa gag gat       2614
Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
            820             825             830

gaa gac aag gac ccc tat ccg cct tgc gat gtg cca gta ggg gaa gag       2662
Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
            835             840             845

gaa gag gaa gag gag gag gat gaa cct gag gtt cct gcc gga ccc cgt       2710
Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
850             855             860
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111

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cct cga agg atc tcg gag ttg aac atg aag gaa aaa att gcc ccc atc      2758
Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865             870             875             880

cct gaa ggg agc gct ttc ttc att ctt agc aag acc aac ccg atc cgc      2806
Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
            885             890             895

gta ggc tgc cac aag ctc atc aac cac cac atc ttc acc aac ctc atc      2854
Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
            900             905             910

ctt gtc ttc atc atg ctg agc agc gct gcc ctg gcc gca gag gac ccc      2902
Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
            915             920             925

atc cgc agc cac tcc ttc cgg aac acg ata ctg ggt tac ttt gac tat      2950
Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
            930             935             940

gcc ttc aca gcc atc ttt act gtt gag atc ctg ttg aag atg aca act      2998
Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945             950             955             960

ttt gga gct ttc ctc cac aaa ggg gcc ttc tgc agg aac tac ttc aat      3046
Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
            965             970             975

ttg ctg gat atg ctg gtg gtt ggg gtg tct ctg gtg tca ttt ggg att      3094
Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
            980             985             990

caa tcc agt gcc atc tcc gtt gtg  aag att ctg agg gtc  tta agg gtc    3142
Gln Ser Ser Ala Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg Val
            995             1000            1005

ctg cgt  ccc ctc agg gcc atc  aac aga gca aaa gga  ctt aag cac       3187
Leu Arg  Pro Leu Arg Ala Ile  Asn Arg Ala Lys Gly  Leu Lys His
    1010            1015            1020

gtg gtc  cag tgc gtc ttc gtg  gcc atc cgg acc atc  ggc aac atc       3232
Val Val  Gln Cys Val Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile
    1025            1030            1035

atg atc  gtc act acc ctc ctg  cag ttc atg ttt gcc  tgt atc ggg       3277
Met Ile  Val Thr Thr Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly
    1040            1045            1050

gtc cag  ttg ttc aag ggg aag  ttc tat cgc tgt acg  gat gaa gcc       3322
Val Gln  Leu Phe Lys Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala
    1055            1060            1065

aaa agt  aac cct gaa gaa tgc  agg gga ctt ttc atc  ctc tac aag       3367
Lys Ser  Asn Pro Glu Glu Cys  Arg Gly Leu Phe Ile  Leu Tyr Lys
    1070            1075            1080

gat ggg  gat gtt gac agt cct  gtg gtc cgt gaa cgg  atc tgg caa       3412
Asp Gly  Asp Val Asp Ser Pro  Val Val Arg Glu Arg  Ile Trp Gln
    1085            1090            1095

aac agt  gat ttc aac ttc gac  aac gtc ctc tct gct  atg atg gcg       3457
Asn Ser  Asp Phe Asn Phe Asp  Asn Val Leu Ser Ala  Met Met Ala
    1100            1105            1110

ctc ttc  aca gtc tcc acg ttt  gag ggc tgg cct gcg  ttg ctg tat       3502
Leu Phe  Thr Val Ser Thr Phe  Glu Gly Trp Pro Ala  Leu Leu Tyr
    1115            1120            1125

aaa gcc  atc gac tcg aat gga  gag aac atc ggc cca  atc tac aac       3547
Lys Ala  Ile Asp Ser Asn Gly  Glu Asn Ile Gly Pro  Ile Tyr Asn
    1130            1135            1140

cac cgc  gtg gag atc tcc atc  ttc ttc atc atc tac  atc atc att       3592
His Arg  Val Glu Ile Ser Ile  Phe Phe Ile Ile Tyr  Ile Ile Ile
    1145            1150            1155
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112

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gta gct ttc ttc atg atg aac   atc ttt gtg ggc ttt   gtc atc gtt        3637
Val Ala Phe Phe Met Met Asn   Ile Phe Val Gly Phe   Val Ile Val
    1160             1165                1170

aca ttt cag gaa caa gga gaa   aaa gag tat aag aac   tgt gag ctg        3682
Thr Phe Gln Glu Gln Gly Glu   Lys Glu Tyr Lys Asn   Cys Glu Leu
    1175             1180                1185

gac aaa aat cag cgt cag tgt   gtt gaa tac gcc ttg   aaa gca cgt        3727
Asp Lys Asn Gln Arg Gln Cys   Val Glu Tyr Ala Leu   Lys Ala Arg
    1190             1195                1200

ccc ttg cgg aga tac atc ccc   aaa aac ccc tac cag   tac aag ttc        3772
Pro Leu Arg Arg Tyr Ile Pro   Lys Asn Pro Tyr Gln   Tyr Lys Phe
    1205             1210                1215

tgg tac gtg gtg aac tct tcg   cct ttc gaa tac atg   atg ttt gtc        3817
Trp Tyr Val Val Asn Ser Ser   Pro Phe Glu Tyr Met   Met Phe Val
    1220             1225                1230

ctc atc atg ctc aac aca ctc   tgc ttg gcc atg cag   cac tac gag        3862
Leu Ile Met Leu Asn Thr Leu   Cys Leu Ala Met Gln   His Tyr Glu
    1235             1240                1245

cag tcc aag atg ttc aat gat   gcc atg gac att ctg   aac atg gtc        3907
Gln Ser Lys Met Phe Asn Asp   Ala Met Asp Ile Leu   Asn Met Val
    1250             1255                1260

ttc acc ggg gtg ttc acc gtc   gag atg gtt ttg aaa   gtc atc gca        3952
Phe Thr Gly Val Phe Thr Val   Glu Met Val Leu Lys   Val Ile Ala
    1265             1270                1275

ttt aag cct aag ggg tat ttt   agt gac gcc tgg aac   acg ttt gac        3997
Phe Lys Pro Lys Gly Tyr Phe   Ser Asp Ala Trp Asn   Thr Phe Asp
    1280             1285                1290

tcc ctc atc gta atc ggc agc   att ata gac gtg gcc   ctc agc gaa        4042
Ser Leu Ile Val Ile Gly Ser   Ile Ile Asp Val Ala   Leu Ser Glu
    1295             1300                1305

gcg gac cca act gaa agt gaa   aat gtc cct gtc cca   act gct aca        4087
Ala Asp Pro Thr Glu Ser Glu   Asn Val Pro Val Pro   Thr Ala Thr
    1310             1315                1320

cct ggg aac tct gaa gag agc   aat aga atc tcc atc   acc ttt ttc        4132
Pro Gly Asn Ser Glu Glu Ser   Asn Arg Ile Ser Ile   Thr Phe Phe
    1325             1330                1335

cgt ctt ttc cga gtg atg cga   ttg gtg aag ctt ctc   agc agg ggg        4177
Arg Leu Phe Arg Val Met Arg   Leu Val Lys Leu Leu   Ser Arg Gly
    1340             1345                1350

gaa ggc atc cgg aca ttg ctg   tgg act ttt att aag   tcc ttt cag        4222
Glu Gly Ile Arg Thr Leu Leu   Trp Thr Phe Ile Lys   Ser Phe Gln
    1355             1360                1365

gcg ctc ccg tat gtg gcc ctc   ctc ata gcc atg ctg   ttc ttc atc        4267
Ala Leu Pro Tyr Val Ala Leu   Leu Ile Ala Met Leu   Phe Phe Ile
    1370             1375                1380

tat gcg gtc att ggc atg cag   atg ttt ggg aaa gtt   gcc atg aga        4312
Tyr Ala Val Ile Gly Met Gln   Met Phe Gly Lys Val   Ala Met Arg
    1385             1390                1395

gat aac aac cag atc aat agg   aac aat aac ttc cag   acg ttt ccc        4357
Asp Asn Asn Gln Ile Asn Arg   Asn Asn Asn Phe Gln   Thr Phe Pro
    1400             1405                1410

cag gcg gtg ctg ctg ctc ttc   agg tgt gca aca ggt   gag gcc tgg        4402
Gln Ala Val Leu Leu Leu Phe   Arg Cys Ala Thr Gly   Glu Ala Trp
    1415             1420                1425

cag gag atc atg ctg gcc tgt   ctc cca ggg aag ctc   tgt gac cct        4447
Gln Glu Ile Met Leu Ala Cys   Leu Pro Gly Lys Leu   Cys Asp Pro
    1430             1435                1440
```

113

```
gag tca gat tac aac ccc ggg  gag gag tat aca tgt  ggg agc aac      4492
Glu Ser Asp Tyr Asn Pro Gly  Glu Glu Tyr Thr Cys  Gly Ser Asn
    1445                1450                1455

ttt gcc att gtc tat ttc atc  agt ttt tac atg ctc  tgt gca ttt      4537
Phe Ala Ile Val Tyr Phe Ile  Ser Phe Tyr Met Leu  Cys Ala Phe
    1460                1465                1470

ctg atc atc aat ctg ttt gtg  gct gtc atc atg gat  aat ttc gac      4582
Leu Ile Ile Asn Leu Phe Val  Ala Val Ile Met Asp  Asn Phe Asp
    1475                1480                1485

tat ctg acc cgg gac tgg tct  att ttg ggg cct cac  cat tta gat      4627
Tyr Leu Thr Arg Asp Trp Ser  Ile Leu Gly Pro His  His Leu Asp
    1490                1495                1500

gaa ttc aaa aga ata tgg tca  gaa tat gac cct gag  gca aag gga      4672
Glu Phe Lys Arg Ile Trp Ser  Glu Tyr Asp Pro Glu  Ala Lys Gly
    1505                1510                1515

agg ata aaa cac ctt gat gtg  gtc act ctg ctt cga  cgc atc cag      4717
Arg Ile Lys His Leu Asp Val  Val Thr Leu Leu Arg  Arg Ile Gln
    1520                1525                1530

cct ccc ctg ggg ttt ggg aag  tta tgt cca cac agg  gta gcg tgc      4762
Pro Pro Leu Gly Phe Gly Lys  Leu Cys Pro His Arg  Val Ala Cys
    1535                1540                1545

aag aga tta gtt gcc atg aac  atg cct ctc aac agt  gac ggg aca      4807
Lys Arg Leu Val Ala Met Asn  Met Pro Leu Asn Ser  Asp Gly Thr
    1550                1555                1560

gtc atg ttt aat gca acc ctg  ttt gct ttg gtt cga  acg gct ctt      4852
Val Met Phe Asn Ala Thr Leu  Phe Ala Leu Val Arg  Thr Ala Leu
    1565                1570                1575

aag atc aag acc gaa ggg aac  ctg gag caa gct aat  gaa gaa ctt      4897
Lys Ile Lys Thr Glu Gly Asn  Leu Glu Gln Ala Asn  Glu Glu Leu
    1580                1585                1590

cgg gct gtg ata aag aaa att  tgg aag aaa acc agc  atg aaa tta      4942
Arg Ala Val Ile Lys Lys Ile  Trp Lys Lys Thr Ser  Met Lys Leu
    1595                1600                1605

ctt gac caa gtt gtc cct cca  gct ggt gat gat gag  gta acc gtg      4987
Leu Asp Gln Val Val Pro Pro  Ala Gly Asp Asp Glu  Val Thr Val
    1610                1615                1620

ggg aag ttc tat gcc act ttc  ctg ata cag gac tac  ttt agg aaa      5032
Gly Lys Phe Tyr Ala Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys
    1625                1630                1635

ttc aag aaa cgg aaa gaa caa  gga ctg gtg gga aag  tac cct gcg      5077
Phe Lys Lys Arg Lys Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala
    1640                1645                1650

aag aac acc aca att gcc cta  cag gcg gga tta agg  aca ctg cat      5122
Lys Asn Thr Thr Ile Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His
    1655                1660                1665

gac att ggg cca gaa atc cgg  cgt gct ata tcg tgt  gat ttg caa      5167
Asp Ile Gly Pro Glu Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln
    1670                1675                1680

gat gac gag cct gag gaa aca  aaa cga gaa gaa gaa  gat gat gtg      5212
Asp Asp Glu Pro Glu Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val
    1685                1690                1695

ttc aaa aga aat ggt gcc ctg  ctt gga aac cat gtc  aat cat gtt      5257
Phe Lys Arg Asn Gly Ala Leu  Leu Gly Asn His Val  Asn His Val
    1700                1705                1710

aat agt gat agg aga gat tcc  ctt cag cag acc aat  acc acc cac      5302
Asn Ser Asp Arg Arg Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His
    1715                1720                1725
```

114

```
cgt ccc ctg cat gtc caa agg   cct tca att cca cct   gca agt gat        5347
Arg Pro Leu His Val Gln Arg   Pro Ser Ile Pro Pro   Ala Ser Asp
    1730                1735                1740

act gag aaa ccg ctg ttt cct   cca gca gga aat tcg   gtg tgt cat        5392
Thr Glu Lys Pro Leu Phe Pro   Pro Ala Gly Asn Ser   Val Cys His
    1745                1750                1755

aac cat cat aac cat aat tcc   ata gga aag caa gtt   ccc acc tca        5437
Asn His His Asn His Asn Ser   Ile Gly Lys Gln Val   Pro Thr Ser
    1760                1765                1770

aca aat gcc aat ctc aat aat   gcc aat atg tcc aaa   gct gcc cat        5482
Thr Asn Ala Asn Leu Asn Asn   Ala Asn Met Ser Lys   Ala Ala His
    1775                1780                1785

gga aag cgg ccc agc att ggg   aac ctt gag cat gtg   tct gaa aat        5527
Gly Lys Arg Pro Ser Ile Gly   Asn Leu Glu His Val   Ser Glu Asn
    1790                1795                1800

ggg cat cat tct tcc cac aag   cat gac cgg gag cct   cag aga agg        5572
Gly His His Ser Ser His Lys   His Asp Arg Glu Pro   Gln Arg Arg
    1805                1810                1815

tcc agt gtg aaa aga acc cgc   tat tat gaa act tac   att agg tcc        5617
Ser Ser Val Lys Arg Thr Arg   Tyr Tyr Glu Thr Tyr   Ile Arg Ser
    1820                1825                1830

gac tca gga gat gaa cag ctc   cca act att tgc cgg   gaa gac cca        5662
Asp Ser Gly Asp Glu Gln Leu   Pro Thr Ile Cys Arg   Glu Asp Pro
    1835                1840                1845

gag ata cat ggc tat ttc agg   gac ccc cac tgc ttg   ggg gag cag        5707
Glu Ile His Gly Tyr Phe Arg   Asp Pro His Cys Leu   Gly Glu Gln
    1850                1855                1860

gag tat ttc agt agt gag gaa   tgc tac gag gat gac   agc tcg ccc        5752
Glu Tyr Phe Ser Ser Glu Glu   Cys Tyr Glu Asp Asp   Ser Ser Pro
    1865                1870                1875

acc tgg agc agg caa aac tat   ggc tac tac agc aga   tac cca ggc        5797
Thr Trp Ser Arg Gln Asn Tyr   Gly Tyr Tyr Ser Arg   Tyr Pro Gly
    1880                1885                1890

aga aac atc gac tct gag agg   ccc cga ggc tac cat   cat ccc caa        5842
Arg Asn Ile Asp Ser Glu Arg   Pro Arg Gly Tyr His   His Pro Gln
    1895                1900                1905

gga ttc ttg gag gac gat gac   tcg ccc gtt tgc tat   gat tca cgg        5887
Gly Phe Leu Glu Asp Asp Asp   Ser Pro Val Cys Tyr   Asp Ser Arg
    1910                1915                1920

aga tct cca agg aga cgc cta   cta cct ccc acc cca   gca tcc cac        5932
Arg Ser Pro Arg Arg Arg Leu   Leu Pro Pro Thr Pro   Ala Ser His
    1925                1930                1935

cgg aga tcc tcc ttc aac ttt   gag tgc ctg cgc cgg   cag agc agc        5977
Arg Arg Ser Ser Phe Asn Phe   Glu Cys Leu Arg Arg   Gln Ser Ser
    1940                1945                1950

cag gaa gag gtc ccg tcg tct   ccc atc ttc ccc cat   cgc acg gcc        6022
Gln Glu Glu Val Pro Ser Ser   Pro Ile Phe Pro His   Arg Thr Ala
    1955                1960                1965

ctg cct ctg cat cta atg cag   caa cag atc atg gca   gtt gcc ggc        6067
Leu Pro Leu His Leu Met Gln   Gln Gln Ile Met Ala   Val Ala Gly
    1970                1975                1980

cta gat tca agt aaa gcc cag   aag tac tca ccg agt   cac tcg acc        6112
Leu Asp Ser Ser Lys Ala Gln   Lys Tyr Ser Pro Ser   His Ser Thr
    1985                1990                1995

cgg tcg tgg gcc acc cct cca   gca acc cct ccc tac   cgg gac tgg        6157
Arg Ser Trp Ala Thr Pro Pro   Ala Thr Pro Pro Tyr   Arg Asp Trp
    2000                2005                2010
```

115

```
aca ccg tgc tac acc ccc ctg atc caa gtg gag cag tca gag gcc    6202
Thr Pro Cys Tyr Thr Pro Leu Ile Gln Val Glu Gln Ser Glu Ala
    2015            2020            2025

ctg gac cag gtg aac ggc agc ctg ccg tcc ctg cac cgc agc tcc    6247
Leu Asp Gln Val Asn Gly Ser Leu Pro Ser Leu His Arg Ser Ser
    2030            2035            2040

tgg tac aca gac gag ccc gac atc tcc tac cgg act ttc aca cca    6292
Trp Tyr Thr Asp Glu Pro Asp Ile Ser Tyr Arg Thr Phe Thr Pro
    2045            2050            2055

gcc agc ctg act gtc ccc agc agc ttc cgg aac aaa aac agc gac    6337
Ala Ser Leu Thr Val Pro Ser Ser Phe Arg Asn Lys Asn Ser Asp
    2060            2065            2070

aag cag agg agt gcg gac agc ttg gtg gag gca gtc ctg ata tcc    6382
Lys Gln Arg Ser Ala Asp Ser Leu Val Glu Ala Val Leu Ile Ser
    2075            2080            2085

gaa ggc ttg gga cgc tat gca agg gac cca aaa ttt gtg tca gca    6427
Glu Gly Leu Gly Arg Tyr Ala Arg Asp Pro Lys Phe Val Ser Ala
    2090            2095            2100

aca aaa cac gaa atc gct gat gcc tgt gac ctc acc atc gac gag    6472
Thr Lys His Glu Ile Ala Asp Ala Cys Asp Leu Thr Ile Asp Glu
    2105            2110            2115

atg gag agt gca gcc agc acc ctg ctt aat ggg aac gtg cgt ccc    6517
Met Glu Ser Ala Ala Ser Thr Leu Leu Asn Gly Asn Val Arg Pro
    2120            2125            2130

cga gcc aac ggg gat gtg ggc ccc ctc tca cac cgg cag gac tat    6562
Arg Ala Asn Gly Asp Val Gly Pro Leu Ser His Arg Gln Asp Tyr
    2135            2140            2145

gag cta cag gac ttt ggt cct ggc tac agc gac gaa gag cca gac    6607
Glu Leu Gln Asp Phe Gly Pro Gly Tyr Ser Asp Glu Glu Pro Asp
    2150            2155            2160

cct ggg agg gat gag gag gac ctg gcg gat gaa atg ata tgc atc    6652
Pro Gly Arg Asp Glu Glu Asp Leu Ala Asp Glu Met Ile Cys Ile
    2165            2170            2175

acc acc ttg tag cccccagcga ggggcagact ggctctggcc tcaggtgggg    6704
Thr Thr Leu
    2180

cgcaggagag ccaggggaaa agtgcctcat agttaggaaa gtttaggcac tagttgggag    6764

taatattcaa ttaattagac ttttgtataa gagatgtcat gcctcaagaa agccataaac    6824

ctggtaggaa caggtcccaa gcggttgagc ctggcagagt accatgcgct cggccccagc    6884

tgcaggaaac agcaggcccc gccctctcac agaggatggg tgaggaggcc agacctgccc    6944

tgccccattg tccagatggg cactgctgtg gagtctgctt ctcccatgta ccagggcacc    7004

aggcccaccc aactgaaggc atggcggcgg ggtgcagggg aaagttaaag gtgatgacga    7064

tcatcacacc tcgtgtcgtt acctcagcca tcggtctagc atatcagtca ctgggcccaa    7124

catatccatt tttaaaccct ttcccccaaa tacactgcgt cctggttcct gtttagctgt    7184

tctgaaata                                                            7193
```

<210> 18
<211> 2181
<212> PRT
<213> Homo sapiens
<400> 18
```
Met Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1               5                   10                  15
```

116

```
Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
            20                  25              30

Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
            35              40                  45

Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
    50              55                  60

Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Val Gly Ser Leu
65                  70                  75                  80

Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85                  90                  95

Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
            100             105                 110

Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
        115                 120                 125

Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
    130                 135                 140

Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145             150                 155                 160

Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
                165                 170                 175

Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180             185                 190

Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
        195             200                 205

Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
    210             215                 220

Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225             230                 235                 240

Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
            245             250                 255

Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260             265                 270

His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
        275             280                 285

Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
    290             295                 300

Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305             310                 315                 320
```

117

```
Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
            325             330             335

Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
            340             345             350

Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
            355             360             365

Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
    370             375             380

Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385             390             395             400

Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
            405             410             415

Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
            420             425             430

Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
            435             440             445

Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
    450             455             460

Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465             470             475             480

Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
            485             490             495

Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
            500             505             510

Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
            515             520             525

Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
    530             535             540

Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545             550             555             560

Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
            565             570             575

Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
            580             585             590

Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
            595             600             605

Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
    610             615             620
```

118

Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625   630   635   640

Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
          645   650   655

Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
          660   665   670

Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
          675   680   685

Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
          690   695   700

Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705   710   715   720

Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
          725   730   735

Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
          740   745   750

Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
          755   760   765

Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
770   775   780

Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785   790   795   800

Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
          805   810   815

Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
          820   825   830

Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
          835   840   845

Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
          850   855   860

Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865   870   875   880

Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
          885   890   895

Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
          900   905   910

Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
          915   920   925

119

```
Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
    930             935             940

Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945             950             955             960

Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
                965             970             975

Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
            980             985             990

Gln Ser Ser Ala Ile Ser Val Val  Lys Ile Leu Arg Val  Leu Arg Val
        995             1000            1005

Leu Arg  Pro Leu Arg Ala Ile  Asn Arg Ala Lys Gly  Leu Lys His
    1010            1015            1020

Val Val  Gln Cys Val Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile
    1025            1030            1035

Met Ile  Val Thr Thr Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly
    1040            1045            1050

Val Gln  Leu Phe Lys Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala
    1055            1060            1065

Lys Ser  Asn Pro Glu Glu Cys  Arg Gly Leu Phe Ile  Leu Tyr Lys
    1070            1075            1080

Asp Gly  Asp Val Asp Ser Pro  Val Val Arg Glu Arg  Ile Trp Gln
    1085            1090            1095

Asn Ser  Asp Phe Asn Phe Asp  Asn Val Leu Ser Ala  Met Met Ala
    1100            1105            1110

Leu Phe  Thr Val Ser Thr Phe  Glu Gly Trp Pro Ala  Leu Leu Tyr
    1115            1120            1125

Lys Ala  Ile Asp Ser Asn Gly  Glu Asn Ile Gly Pro  Ile Tyr Asn
    1130            1135            1140

His Arg  Val Glu Ile Ser Ile  Phe Phe Ile Ile Tyr  Ile Ile Ile
    1145            1150            1155

Val Ala  Phe Phe Met Met Asn  Ile Phe Val Gly Phe  Val Ile Val
    1160            1165            1170

Thr Phe  Gln Glu Gln Gly Glu  Lys Glu Tyr Lys Asn  Cys Glu Leu
    1175            1180            1185

Asp Lys  Asn Gln Arg Gln Cys  Val Glu Tyr Ala Leu  Lys Ala Arg
    1190            1195            1200

Pro Leu  Arg Arg Tyr Ile Pro  Lys Asn Pro Tyr Gln  Tyr Lys Phe
    1205            1210            1215
```

120

```
Trp Tyr   Val Val Asn Ser Ser   Pro Phe Glu Tyr Met   Met Phe Val
    1220                1225              1230

Leu Ile   Met Leu Asn Thr Leu   Cys Leu Ala Met Gln   His Tyr Glu
    1235                1240              1245

Gln Ser   Lys Met Phe Asn Asp   Ala Met Asp Ile Leu   Asn Met Val
    1250                1255              1260

Phe Thr   Gly Val Phe Thr Val   Glu Met Val Leu Lys   Val Ile Ala
    1265                1270              1275

Phe Lys   Pro Lys Gly Tyr Phe   Ser Asp Ala Trp Asn   Thr Phe Asp
    1280                1285              1290

Ser Leu   Ile Val Ile Gly Ser   Ile Ile Asp Val Ala   Leu Ser Glu
    1295                1300              1305

Ala Asp   Pro Thr Glu Ser Glu   Asn Val Pro Val Pro   Thr Ala Thr
    1310                1315              1320

Pro Gly   Asn Ser Glu Glu Ser   Asn Arg Ile Ser Ile   Thr Phe Phe
    1325                1330              1335

Arg Leu   Phe Arg Val Met Arg   Leu Val Lys Leu Leu   Ser Arg Gly
    1340                1345              1350

Glu Gly   Ile Arg Thr Leu Leu   Trp Thr Phe Ile Lys   Ser Phe Gln
    1355                1360              1365

Ala Leu   Pro Tyr Val Ala Leu   Leu Ile Ala Met Leu   Phe Phe Ile
    1370                1375              1380

Tyr Ala   Val Ile Gly Met Gln   Met Phe Gly Lys Val   Ala Met Arg
    1385                1390              1395

Asp Asn   Asn Gln Ile Asn Arg   Asn Asn Asn Phe Gln   Thr Phe Pro
    1400                1405              1410

Gln Ala   Val Leu Leu Leu Phe   Arg Cys Ala Thr Gly   Glu Ala Trp
    1415                1420              1425

Gln Glu   Ile Met Leu Ala Cys   Leu Pro Gly Lys Leu   Cys Asp Pro
    1430                1435              1440

Glu Ser   Asp Tyr Asn Pro Gly   Glu Glu Tyr Thr Cys   Gly Ser Asn
    1445                1450              1455

Phe Ala   Ile Val Tyr Phe Ile   Ser Phe Tyr Met Leu   Cys Ala Phe
    1460                1465              1470

Leu Ile   Ile Asn Leu Phe Val   Ala Val Ile Met Asp   Asn Phe Asp
    1475                1480              1485

Tyr Leu   Thr Arg Asp Trp Ser   Ile Leu Gly Pro His   His Leu Asp
    1490                1495              1500
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Glu Phe  Lys Arg Ile Trp Ser  Glu Tyr Asp Pro Glu  Ala Lys Gly
    1505                  1510               1515

Arg Ile  Lys His Leu Asp Val  Val Thr Leu Leu Arg  Arg Ile Gln
    1520                  1525               1530

Pro Pro  Leu Gly Phe Gly Lys  Leu Cys Pro His Arg  Val Ala Cys
    1535                  1540               1545

Lys Arg  Leu Val Ala Met Asn  Met Pro Leu Asn Ser  Asp Gly Thr
    1550                  1555               1560

Val Met  Phe Asn Ala Thr Leu  Phe Ala Leu Val Arg  Thr Ala Leu
    1565                  1570               1575

Lys Ile  Lys Thr Glu Gly Asn  Leu Glu Gln Ala Asn  Glu Glu Leu
    1580                  1585               1590

Arg Ala  Val Ile Lys Lys Ile  Trp Lys Lys Thr Ser  Met Lys Leu
    1595                  1600               1605

Leu Asp  Gln Val Val Pro Pro  Ala Gly Asp Asp Glu  Val Thr Val
    1610                  1615               1620

Gly Lys  Phe Tyr Ala Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys
    1625                  1630               1635

Phe Lys  Lys Arg Lys Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala
    1640                  1645               1650

Lys Asn  Thr Thr Ile Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His
    1655                  1660               1665

Asp Ile  Gly Pro Glu Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln
    1670                  1675               1680

Asp Asp  Glu Pro Glu Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val
    1685                  1690               1695

Phe Lys  Arg Asn Gly Ala Leu  Leu Gly Asn His Val  Asn His Val
    1700                  1705               1710

Asn Ser  Asp Arg Arg Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His
    1715                  1720               1725

Arg Pro  Leu His Val Gln Arg  Pro Ser Ile Pro Pro  Ala Ser Asp
    1730                  1735               1740

Thr Glu  Lys Pro Leu Phe Pro  Pro Ala Gly Asn Ser  Val Cys His
    1745                  1750               1755

Asn His  His Asn His Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser
    1760                  1765               1770

Thr Asn  Ala Asn Leu Asn Asn  Ala Asn Met Ser Lys  Ala Ala His
    1775                  1780               1785
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122

```
Gly Lys  Arg Pro Ser Ile Gly  Asn Leu Glu His Val  Ser Glu Asn
    1790                1795                1800

Gly His  His Ser Ser His Lys  His Asp Arg Glu Pro  Gln Arg Arg
    1805                1810                1815

Ser Ser  Val Lys Arg Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser
    1820                1825                1830

Asp Ser  Gly Asp Glu Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro
    1835                1840                1845

Glu Ile  His Gly Tyr Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln
    1850                1855                1860

Glu Tyr  Phe Ser Ser Glu Glu  Cys Tyr Glu Asp Asp  Ser Ser Pro
    1865                1870                1875

Thr Trp  Ser Arg Gln Asn Tyr  Gly Tyr Tyr Ser Arg  Tyr Pro Gly
    1880                1885                1890

Arg Asn  Ile Asp Ser Glu Arg  Pro Arg Gly Tyr His  His Pro Gln
    1895                1900                1905

Gly Phe  Leu Glu Asp Asp Asp  Ser Pro Val Cys Tyr  Asp Ser Arg
    1910                1915                1920

Arg Ser  Pro Arg Arg Arg Leu  Leu Pro Pro Thr Pro  Ala Ser His
    1925                1930                1935

Arg Arg  Ser Ser Phe Asn Phe  Glu Cys Leu Arg Arg  Gln Ser Ser
    1940                1945                1950

Gln Glu  Glu Val Pro Ser Ser  Pro Ile Phe Pro His  Arg Thr Ala
    1955                1960                1965

Leu Pro  Leu His Leu Met Gln  Gln Gln Ile Met Ala  Val Ala Gly
    1970                1975                1980

Leu Asp  Ser Ser Lys Ala Gln  Lys Tyr Ser Pro Ser  His Ser Thr
    1985                1990                1995

Arg Ser  Trp Ala Thr Pro Pro  Ala Thr Pro Pro Tyr  Arg Asp Trp
    2000                2005                2010

Thr Pro  Cys Tyr Thr Pro Leu  Ile Gln Val Glu Gln  Ser Glu Ala
    2015                2020                2025

Leu Asp  Gln Val Asn Gly Ser  Leu Pro Ser Leu His  Arg Ser Ser
    2030                2035                2040

Trp Tyr  Thr Asp Glu Pro Asp  Ile Ser Tyr Arg Thr  Phe Thr Pro
    2045                2050                2055

Ala Ser  Leu Thr Val Pro Ser  Ser Phe Arg Asn Lys  Asn Ser Asp
    2060                2065                2070
```

123

```
Lys Gln  Arg Ser Ala Asp Ser  Leu Val Glu Ala Val  Leu Ile Ser
    2075              2080              2085

Glu Gly  Leu Gly Arg Tyr Ala  Arg Asp Pro Lys Phe  Val Ser Ala
    2090              2095              2100

Thr Lys  His Glu Ile Ala Asp  Ala Cys Asp Leu Thr  Ile Asp Glu
    2105              2110              2115

Met Glu  Ser Ala Ala Ser Thr  Leu Leu Asn Gly Asn  Val Arg Pro
    2120              2125              2130

Arg Ala  Asn Gly Asp Val Gly  Pro Leu Ser His Arg  Gln Asp Tyr
    2135              2140              2145

Glu Leu  Gln Asp Phe Gly Pro  Gly Tyr Ser Asp Glu  Glu Pro Asp
    2150              2155              2160

Pro Gly  Arg Asp Glu Glu Asp  Leu Ala Asp Glu Met  Ile Cys Ile
    2165              2170              2175

Thr Thr  Leu
    2180


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cgcctcaacg cccagcacag tgccctgcac acagtagtcg ctcaataaat gttcgtgg     118

atg atg atg atg atg atg atg aaa aaa atg cag cat caa cgg cag cag    166
Met Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1               5                   10                  15

caa gcg gac cac gcg aac gag gca aac tat gca aga ggc acc aga ctt    214
Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
            20                  25                  30

cct ctt tct ggt gaa gga cca act tct cag ccg aat agc tcc aag caa    262
Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
        35                  40                  45

act gtc ctg tct tgg caa gct gca atc gat gct gct aga cag gcc aag    310
Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
    50                  55                  60

gct gcc caa act atg agc acc tct gca ccc cca cct gta gga tct ctc    358
Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
65                  70                  75                  80

tcc caa aga aaa cgt cag caa tac gcc aag agc aaa aaa cag ggt aac    406
Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85                  90                  95
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124

```
tcg tcc aac agc cga cct gcc cgc gcc ctt ttc tgt tta tca ctc aat    454
Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
            100                 105                 110

aac ccc atc cga aga gcc tgc att agt ata gtg gaa tgg aaa cca ttt    502
Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
            115                 120                 125

gac ata ttt ata tta ttg gct att ttt gcc aat tgt gtg gcc tta gct    550
Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
            130                 135                 140

att tac atc cca ttc cct gaa gat gat tct aat tca aca aat cat aac    598
Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145                 150                 155                 160

ttg gaa aaa gta gaa tat gcc ttc ctg att att ttt aca gtc gag aca    646
Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
                165                 170                 175

ttt ttg aag att ata gcg tat gga tta ttg cta cat cct aat gct tat    694
Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
                180                 185                 190

gtt agg aat gga tgg aat tta ctg gat ttt gtt ata gta ata gta gga    742
Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
                195                 200                 205

ttg ttt agt gta att ttg gaa caa tta acc aaa gaa aca gaa ggc ggg    790
Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
            210                 215                 220

aac cac tca agc ggc aaa tct gga ggc ttt gat gtc aaa gcc ctc cgt    838
Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225                 230                 235                 240

gcc ttt cga gtg ttg cga cca ctt cga cta gtg tca ggg gtg ccc agt    886
Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
                245                 250                 255

tta caa gtt gtc ctg aac tcc att ata aaa gcc atg gtt ccc ctc ctt    934
Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
                260                 265                 270

cac ata gcc ctt ttg gta tta ttt gta atc ata atc tat gct att ata    982
His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
            275                 280                 285

gga ttg gaa ctt ttt att gga aaa atg cac aaa aca tgt ttt ttt gct   1030
Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
            290                 295                 300

gac tca gat atc gta gct gaa gag gac cca gct cca tgt gcg ttc tca   1078
Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305                 310                 315                 320

ggg aat gga cgc cag tgt act gcc aat ggc acg gaa tgt agg agt ggc   1126
Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
                325                 330                 335

tgg gtt ggc ccg aac gga ggc atc acc aac ttt gat aac ttt gcc ttt   1174
Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
                340                 345                 350

gcc atg ctt act gtg ttt cag tgc atc acc atg gag ggc tgg aca gac   1222
Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
                355                 360                 365

gtg ctc tac tgg gta aat gat gcg ata gga tgg gaa tgg cca tgg gtg   1270
Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
            370                 375                 380

tat ttt gtt agt ctg atc atc ctt ggc tca ttt ttc gtc ctt aac ctg   1318
Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385                 390                 395                 400
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125

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gtt ctt ggt gtc ctt agt gga gaa ttc tca aag gaa aga gag aag gca      1366
Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
            405                     410                     415

aaa gca cgg gga gat ttc cag aag ctc cgg gag aag cag cag ctg gag      1414
Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
            420                     425                     430

gag gat cta aag ggc tac ttg gat tgg atc acc caa gct gag gac atc      1462
Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
            435                     440                     445

gat ccg gag aat gag gaa gaa gga gga gag gaa ggc aaa cga aat act      1510
Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
        450                     455                     460

agc atg ccc acc agc gag act gag tct gtg aac aca gag aac gtc agc      1558
Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465                     470                     475                 480

ggt gaa ggc gag aac cga ggc tgc tgt gga agt ctc tgg tgc tgg tgg      1606
Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
                    485             490                     495

aga cgg aga ggc gcg gcc aag gcg ggg ccc tct ggg tgt cgg cgg tgg      1654
Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
                500                 505                 510

ggt caa gcc atc tca aaa tcc aaa ctc agc cga cgc tgg cgt cgc tgg      1702
Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
            515                 520                     525

aac cga ttc aat cgc aga aga tgt agg gcc gcc gtg aag tct gtc acg      1750
Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
            530                 535                     540

ttt tac tgg ctg gtt atc gtc ctg gtg ttt ctg aac acc tta acc att      1798
Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545                     550                     555                 560

tcc tct gag cac tac aat cag cca gat tgg ttg aca cag att caa gat      1846
Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
                565                 570                     575

att gcc aac aaa gtc ctc ttg gct ctg ttc acc tgc gag atg ctg gta      1894
Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
                580                 585                     590

aaa atg tac agc ttg ggc ctc caa gca tat ttc gtc tct ctt ttc aac      1942
Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
                595                 600                     605

cgg ttt gat tgc ttc gtg gtg tgt ggt gga atc act gag acg atc ctg      1990
Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
            610                 615                     620

gtg gaa ctg gaa atc atg tct ccc ctg ggg atc tct gtg ttt cgg tgt      2038
Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625                     630                     635                 640

gtg cgc ctc tta aga atc ttc aaa gtg acc agg cac tgg act tcc ctg      2086
Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
                    645                 650                     655

agc aac tta gtg gca tcc tta tta aac tcc atg aag tcc atc gct tcg      2134
Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
                    660                 665                     670

ctg ttg ctt ctg ctt ttt ctc ttc att atc atc ttt tcc ttg ctt ggg      2182
Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
            675                 680                     685

atg cag ctg ttt ggc ggc aag ttt aat ttt gat gaa acg caa acc aag      2230
Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
            690                 695                     700
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126

```
cgg agc acc ttt gac aat ttc cct caa gca ctt ctc aca gtg ttc cag    2278
Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705             710             715             720

atc ctg aca ggc gaa gac tgg aat gct gtg atg tac gat ggc atc atg    2326
Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
                725             730             735

gct tac ggg ggc cca tcc tct tca gga atg atc gtc tgc atc tac ttc    2374
Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
            740             745             750

atc atc ctc ttc att tgt ggt aac tat att cta ctg aat gtc ttc ttg    2422
Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
            755             760             765

gcc atc gct gta gac aat ttg gct gat gct gaa agt ctg aac act gct    2470
Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
            770             775             780

cag aaa gaa gaa gcg gaa gaa aag gag agg aaa aag att gcc aga aaa    2518
Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785             790             795             800

gag agc cta gaa aat aaa aag aac aac aaa cca gaa gtc aac cag ata    2566
Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
                805             810             815

gcc aac agt gac aac aag gtt aca att gat gac tat aga gaa gag gat    2614
Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
                820             825             830

gaa gac aag gac ccc tat ccg cct tgc gat gtg cca gta ggg gaa gag    2662
Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
            835             840             845

gaa gag gaa gag gag gag gat gaa cct gag gtt cct gcc gga ccc cgt    2710
Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
850             855             860

cct cga agg atc tcg gag ttg aac atg aag gaa aaa att gcc ccc atc    2758
Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865             870             875             880

cct gaa ggg agc gct ttc ttc att ctt agc aag acc aac ccg atc cgc    2806
Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
                885             890             895

gta ggc tgc cac aag ctc atc aac cac cac atc ttc acc aac ctc atc    2854
Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
                900             905             910

ctt gtc ttc atc atg ctg agc agc gct gcc ctg gcc gca gag gac ccc    2902
Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
                915             920             925

atc cgc agc cac tcc ttc cgg aac acg ata ctg ggt tac ttt gac tat    2950
Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
        930             935             940

gcc ttc aca gcc atc ttt act gtt gag atc ctg ttg aag atg aca act    2998
Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945             950             955             960

ttt gga gct ttc ctc cac aaa ggg gcc ttc tgc agg aac tac ttc aat    3046
Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
                965             970             975

ttg ctg gat atg ctg gtg gtt ggg gtg tct ctg gtg tca ttt ggg att    3094
Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
                980             985             990

caa tcc agt gcc atc tcc gtt gtg    aag att ctg agg gtc    tta agg gtc    3142
Gln Ser Ser Ala Ile Ser Val Val    Lys Ile Leu Arg Val    Leu Arg Val
                995             1000             1005
```

127

```
ctg cgt ccc ctc agg gcc atc   aac aga gca aaa gga   ctt aag cac        3187
Leu Arg Pro Leu Arg Ala Ile   Asn Arg Ala Lys Gly   Leu Lys His
    1010            1015                 1020

gtg gtc cag tgc gtc ttc gtg   gcc atc cgg acc atc   ggc aac atc        3232
Val Val Gln Cys Val Phe Val   Ala Ile Arg Thr Ile   Gly Asn Ile
    1025            1030                 1035

atg atc gtc act acc ctc ctg   cag ttc atg ttt gcc   tgt atc ggg        3277
Met Ile Val Thr Thr Leu Leu   Gln Phe Met Phe Ala   Cys Ile Gly
    1040            1045                 1050

gtc cag ttg ttc aag ggg aag   ttc tat cgc tgt acg   gat gaa gcc        3322
Val Gln Leu Phe Lys Gly Lys   Phe Tyr Arg Cys Thr   Asp Glu Ala
    1055            1060                 1065

aaa agt aac cct gaa gaa tgc   agg gga ctt ttc atc   ctc tac aag        3367
Lys Ser Asn Pro Glu Glu Cys   Arg Gly Leu Phe Ile   Leu Tyr Lys
    1070            1075                 1080

gat ggg gat gtt gac agt cct   gtg gtc cgt gaa cgg   atc tgg caa        3412
Asp Gly Asp Val Asp Ser Pro   Val Val Arg Glu Arg   Ile Trp Gln
    1085            1090          .      1095

aac agt gat ttc aac ttc gac   aac gtc ctc tct gct   atg atg gcg        3457
Asn Ser Asp Phe Asn Phe Asp   Asn Val Leu Ser Ala   Met Met Ala
    1100            1105                 1110

ctc ttc aca gtc tcc acg ttt   gag ggc tgg cct gcg   ttg ctg tat        3502
Leu Phe Thr Val Ser Thr Phe   Glu Gly Trp Pro Ala   Leu Leu Tyr
    1115            1120                 1125

aaa gcc atc gac tcg aat gga   gag aac atc ggc cca   atc tac aac        3547
Lys Ala Ile Asp Ser Asn Gly   Glu Asn Ile Gly Pro   Ile Tyr Asn
    1130            1135                 1140

cac cgc gtg gag atc tcc atc   ttc ttc atc atc tac   atc atc att        3592
His Arg Val Glu Ile Ser Ile   Phe Phe Ile Ile Tyr   Ile Ile Ile
    1145            1150                 1155

gta gct ttc ttc atg atg aac   atc ttt gtg ggc ttt   gtc atc gtt        3637
Val Ala Phe Phe Met Met Asn   Ile Phe Val Gly Phe   Val Ile Val
    1160            1165                 1170

aca ttt cag gaa caa gga gaa   aaa gag tat aag aac   tgt gag ctg        3682
Thr Phe Gln Glu Gln Gly Glu   Lys Glu Tyr Lys Asn   Cys Glu Leu
    1175            1180                 1185

gac aaa aat cag cgt cag tgt   gtt gaa tac gcc ttg   aaa gca cgt        3727
Asp Lys Asn Gln Arg Gln Cys   Val Glu Tyr Ala Leu   Lys Ala Arg
    1190            1195                 1200

ccc ttg cgg aga tac atc ccc   aaa aac ccc tac cag   tac aag ttc        3772
Pro Leu Arg Arg Tyr Ile Pro   Lys Asn Pro Tyr Gln   Tyr Lys Phe
    1205            1210                 1215

tgg tac gtg gtg aac tct tcg   cct ttc gaa tac atg   atg ttt gtc        3817
Trp Tyr Val Val Asn Ser Ser   Pro Phe Glu Tyr Met   Met Phe Val
    1220            1225                 1230

ctc atc atg ctc aac aca ctc   tgc ttg gcc atg cag   cac tac gag        3862
Leu Ile Met Leu Asn Thr Leu   Cys Leu Ala Met Gln   His Tyr Glu
    1235            1240                 1245

cag tcc aag atg ttc aat gat   gcc atg gac att ctg   aac atg gtc        3907
Gln Ser Lys Met Phe Asn Asp   Ala Met Asp Ile Leu   Asn Met Val
    1250            1255                 1260

ttc acc ggg gtg ttc acc gtc   gag atg gtt ttg aaa   gtc atc gca        3952
Phe Thr Gly Val Phe Thr Val   Glu Met Val Leu Lys   Val Ile Ala
    1265            1270                 1275

ttt aag cct aag ggg tat ttt   agt gac gcc tgg aac   acg ttt gac        3997
Phe Lys Pro Lys Gly Tyr Phe   Ser Asp Ala Trp Asn   Thr Phe Asp
    1280            1285                 1290
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128

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tcc ctc atc gta atc ggc agc   att ata gac gtg gcc   ctc agc gaa        4042
Ser Leu Ile Val Ile Gly Ser   Ile Ile Asp Val Ala   Leu Ser Glu
    1295                1300                  1305

gcg gac cca act gaa agt gaa   aat gtc cct gtc cca   act gct aca        4087
Ala Asp Pro Thr Glu Ser Glu   Asn Val Pro Val Pro   Thr Ala Thr
    1310                1315                  1320

cct ggg aac tct gaa gag agc   aat aga atc tcc atc   acc ttt ttc        4132
Pro Gly Asn Ser Glu Glu Ser   Asn Arg Ile Ser Ile   Thr Phe Phe
    1325                1330                  1335

cgt ctt ttc cga gtg atg cga   ttg gtg aag ctt ctc   agc agg ggg        4177
Arg Leu Phe Arg Val Met Arg   Leu Val Lys Leu Leu   Ser Arg Gly
    1340                1345                  1350

gaa ggc atc cgg aca ttg ctg   tgg act ttt att aag   tcc ttt cag        4222
Glu Gly Ile Arg Thr Leu Leu   Trp Thr Phe Ile Lys   Ser Phe Gln
    1355                1360                  1365

gcg ctc ccg tat gtg gcc ctc   ctc ata gcc atg ctg   ttc ttc atc        4267
Ala Leu Pro Tyr Val Ala Leu   Leu Ile Ala Met Leu   Phe Phe Ile
    1370                1375                  1380

tat gcg gtc att ggc atg cag   atg ttt ggg aaa gtt   gcc atg aga        4312
Tyr Ala Val Ile Gly Met Gln   Met Phe Gly Lys Val   Ala Met Arg
    1385                1390                  1395

gat aac aac cag atc aat agg   aac aat aac ttc cag   acg ttt ccc        4357
Asp Asn Asn Gln Ile Asn Arg   Asn Asn Asn Phe Gln   Thr Phe Pro
    1400                1405                  1410

cag gcg gtg ctg ctg ctc ttc   agg tgt gca aca ggt   gag gcc tgg        4402
Gln Ala Val Leu Leu Leu Phe   Arg Cys Ala Thr Gly   Glu Ala Trp
    1415                1420                  1425

cag gag atc atg ctg gcc tgt   ctc cca ggg aag ctc   tgt gac cct        4447
Gln Glu Ile Met Leu Ala Cys   Leu Pro Gly Lys Leu   Cys Asp Pro
    1430                1435                  1440

gag tca gat tac aac ccc ggg   gag gag tat aca tgt   ggg agc aac        4492
Glu Ser Asp Tyr Asn Pro Gly   Glu Glu Tyr Thr Cys   Gly Ser Asn
    1445                1450                  1455

ttt gcc att gtc tat ttc atc   agt ttt tac atg ctc   tgt gca ttt        4537
Phe Ala Ile Val Tyr Phe Ile   Ser Phe Tyr Met Leu   Cys Ala Phe
    1460                1465                  1470

ctg atc atc aat ctg ttt gtg   gct gtc atc atg gat   aat ttc gac        4582
Leu Ile Ile Asn Leu Phe Val   Ala Val Ile Met Asp   Asn Phe Asp
    1475                1480                  1485

tat ctg acc cgg gac tgg tct   att ttg ggg cct cac   cat tta gat        4627
Tyr Leu Thr Arg Asp Trp Ser   Ile Leu Gly Pro His   His Leu Asp
    1490                1495                  1500

gaa ttc aaa aga ata tgg tca   gaa tat gac cct gag   gca aag gga        4672
Glu Phe Lys Arg Ile Trp Ser   Glu Tyr Asp Pro Glu   Ala Lys Gly
    1505                1510                  1515

agg ata aaa cac ctt gat gtg   gtc act ctg ctt cga   cgc atc cag        4717
Arg Ile Lys His Leu Asp Val   Val Thr Leu Leu Arg   Arg Ile Gln
    1520                1525                  1530

cct ccc ctg ggg ttt ggg aag   tta tgt cca cac agg   gta gcg tgc        4762
Pro Pro Leu Gly Phe Gly Lys   Leu Cys Pro His Arg   Val Ala Cys
    1535                1540                  1545

aag aga tta gtt gcc atg aac   atg cct ctc aac agt   gac ggg aca        4807
Lys Arg Leu Val Ala Met Asn   Met Pro Leu Asn Ser   Asp Gly Thr
    1550                1555                  1560

gtc atg ttt aat gca acc ctg   ttt gct ttg gtt cga   acg gct ctt        4852
Val Met Phe Asn Ala Thr Leu   Phe Ala Leu Val Arg   Thr Ala Leu
    1565                1570                  1575
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129

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aag atc  aag acc gaa ggg aac  ctg gag caa gct aat  gaa gaa ctt    4897
Lys Ile  Lys Thr Glu Gly Asn  Leu Glu Gln Ala Asn  Glu Glu Leu
    1580              1585                   1590

cgg gct  gtg ata aag aaa att  tgg aag aaa acc agc  atg aaa tta    4942
Arg Ala  Val Ile Lys Lys Ile  Trp Lys Lys Thr Ser  Met Lys Leu
    1595              1600                   1605

ctt gac  caa gtt gtc cct cca  gct ggt gat gat gag  gta acc gtg    4987
Leu Asp  Gln Val Val Pro Pro  Ala Gly Asp Asp Glu  Val Thr Val
    1610              1615                   1620

ggg aag  ttc tat gcc act ttc  ctg ata cag gac tac  ttt agg aaa    5032
Gly Lys  Phe Tyr Ala Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys
    1625              1630                   1635

ttc aag  aaa cgg aaa gaa caa  gga ctg gtg gga aag  tac cct gcg    5077
Phe Lys  Lys Arg Lys Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala
    1640              1645                   1650

aag aac  acc aca att gcc cta  cag gcg gga tta agg  aca ctg cat    5122
Lys Asn  Thr Thr Ile Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His
    1655              1660                   1665

gac att  ggg cca gaa atc cgg  cgt gct ata tcg tgt  gat ttg caa    5167
Asp Ile  Gly Pro Glu Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln
    1670              1675                   1680

gat gac  gag cct gag gaa aca  aaa cga gaa gaa gaa  gat gat gtg    5212
Asp Asp  Glu Pro Glu Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val
    1685              1690                   1695

ttc aaa  aga aat ggt gcc ctg  ctt gga aac cat gtc  aat cat gtt    5257
Phe Lys  Arg Asn Gly Ala Leu  Leu Gly Asn His Val  Asn His Val
    1700              1705                   1710

aat agt  gat agg aga gat tcc  ctt cag cag acc aat  acc acc cac    5302
Asn Ser  Asp Arg Arg Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His
    1715              1720                   1725

cgt ccc  ctg cat gtc caa agg  cct tca att cca cct  gca agt gat    5347
Arg Pro  Leu His Val Gln Arg  Pro Ser Ile Pro Pro  Ala Ser Asp
    1730              1735                   1740

act gag  aaa ccg ctg ttt cct  cca gca gga aat tcg  gtg tgt cat    5392
Thr Glu  Lys Pro Leu Phe Pro  Pro Ala Gly Asn Ser  Val Cys His
    1745              1750                   1755

aac cat  cat aac cat aat tcc  ata gga aag caa gtt  ccc acc tca    5437
Asn His  His Asn His Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser
    1760              1765                   1770

aca aat  gcc aat ctc aat aat  gcc aat atg tcc aaa  gct gcc cat    5482
Thr Asn  Ala Asn Leu Asn Asn  Ala Asn Met Ser Lys  Ala Ala His
    1775              1780                   1785

gga aag  cgg ccc agc att ggg  aac ctt gag cat gtg  tct gaa aat    5527
Gly Lys  Arg Pro Ser Ile Gly  Asn Leu Glu His Val  Ser Glu Asn
    1790              1795                   1800

ggg cat  cat tct tcc cac aag  cat gac cgg gag cct  cag aga agg    5572
Gly His  His Ser Ser His Lys  His Asp Arg Glu Pro  Gln Arg Arg
    1805              1810                   1815

tcc agt  gtg aaa aga acc cgc  tat tat gaa act tac  att agg tcc    5617
Ser Ser  Val Lys Arg Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser
    1820              1825                   1830

gac tca  gga gat gaa cag ctc  cca act att tgc cgg  gaa gac cca    5662
Asp Ser  Gly Asp Glu Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro
    1835              1840                   1845

gag ata  cat ggc tat ttc agg  gac ccc cac tgc ttg  ggg gag cag    5707
Glu Ile  His Gly Tyr Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln
    1850              1855                   1860
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130

```
gag tat ttc agt agt gag gaa   tgc tac gag gat gac   agc tcg ccc        5752
Glu Tyr Phe Ser Ser Glu Glu   Cys Tyr Glu Asp Asp   Ser Ser Pro
    1865                1870                1875

acc tgg agc agg caa aac tat   ggc tac tac agc aga   tac cca ggc        5797
Thr Trp Ser Arg Gln Asn Tyr   Gly Tyr Tyr Ser Arg   Tyr Pro Gly
    1880                1885                1890

aga aac atc gac tct gag agg   ccc cga ggc tac cat   cat ccc caa        5842
Arg Asn Ile Asp Ser Glu Arg   Pro Arg Gly Tyr His   His Pro Gln
    1895                1900                1905

gga ttc ttg gag gac gat gac   tcg ccc gtt tgc tat   gat tca cgg        5887
Gly Phe Leu Glu Asp Asp Asp   Ser Pro Val Cys Tyr   Asp Ser Arg
    1910                1915                1920

aga tct cca agg aga cgc cta   cta cct ccc acc cca   gca tcc cac        5932
Arg Ser Pro Arg Arg Arg Leu   Leu Pro Pro Thr Pro   Ala Ser His
    1925                1930                1935

cgg aga tcc tcc ttc aac ttt   gag tgc ctg cgc cgg   cag agc agc        5977
Arg Arg Ser Ser Phe Asn Phe   Glu Cys Leu Arg Arg   Gln Ser Ser
    1940                1945                1950

cag gaa gag gtc ccg tcg tct   ccc atc ttc ccc cat   cgc acg gcc        6022
Gln Glu Glu Val Pro Ser Ser   Pro Ile Phe Pro His   Arg Thr Ala
    1955                1960                1965

ctg cct ctg cat cta atg cag   caa cag atc atg gca   gtt gcc ggc        6067
Leu Pro Leu His Leu Met Gln   Gln Gln Ile Met Ala   Val Ala Gly
    1970                1975                1980

cta gat tca agt aaa gcc cag   aag tac tca ccg agt   cac tcg acc        6112
Leu Asp Ser Ser Lys Ala Gln   Lys Tyr Ser Pro Ser   His Ser Thr
    1985                1990                1995

cgg tcg tgg gcc acc cct cca   gca acc cct ccc tac   cgg gac tgg        6157
Arg Ser Trp Ala Thr Pro Pro   Ala Thr Pro Pro Tyr   Arg Asp Trp
    2000                2005                2010

aca ccg tgc tac acc ccc ctg   atc caa gtg gag cag   tca gag gcc        6202
Thr Pro Cys Tyr Thr Pro Leu   Ile Gln Val Glu Gln   Ser Glu Ala
    2015                2020                2025

ctg gac cag gtg aac ggc agc   ctg ccg tcc ctg cac   cgc agc tcc        6247
Leu Asp Gln Val Asn Gly Ser   Leu Pro Ser Leu His   Arg Ser Ser
    2030                2035                2040

tgg tac aca gac gag ccc gac   atc tcc tac cgg act   ttc aca cca        6292
Trp Tyr Thr Asp Glu Pro Asp   Ile Ser Tyr Arg Thr   Phe Thr Pro
    2045                2050                2055

gcc agc ctg act gtc ccc agc   agc ttc cgg aac aaa   aac agc gac        6337
Ala Ser Leu Thr Val Pro Ser   Ser Phe Arg Asn Lys   Asn Ser Asp
    2060                2065                2070

aag cag agg agt gcg gac agc   ttg gtg gag gca gtc   ctg ata tcc        6382
Lys Gln Arg Ser Ala Asp Ser   Leu Val Glu Ala Val   Leu Ile Ser
    2075                2080                2085

gaa ggc ttg gga cgc tat gca   agg gac cca aaa ttt   gtg tca gca        6427
Glu Gly Leu Gly Arg Tyr Ala   Arg Asp Pro Lys Phe   Val Ser Ala
    2090                2095                2100

aca aaa cac gaa atc gct gat   gcc tgt gac ctc acc   atc gac gag        6472
Thr Lys His Glu Ile Ala Asp   Ala Cys Asp Leu Thr   Ile Asp Glu
    2105                2110                2115

atg gag agt gca gcc agc acc   ctg ctt aat ggg aac   gtg cgt ccc        6517
Met Glu Ser Ala Ala Ser Thr   Leu Leu Asn Gly Asn   Val Arg Pro
    2120                2125                2130

cga gcc aac ggg gat gtg ggc   ccc ctc tca cac cgg   cag gac tat        6562
Arg Ala Asn Gly Asp Val Gly   Pro Leu Ser His Arg   Gln Asp Tyr
    2135                2140                2145
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131

```
gag cta  cag gac ttt ggt cct  ggc tac agc gac gaa  gag cca gac        6607
Glu Leu  Gln Asp Phe Gly Pro  Gly Tyr Ser Asp Glu  Glu Pro Asp
    2150                2155               2160

cct ggg  agg gat gag gag gac  ctg gcg gat gaa atg  ata tgc atc        6652
Pro Gly  Arg Asp Glu Glu Asp  Leu Ala Asp Glu Met  Ile Cys Ile
    2165                2170               2175

acc acc  ttg tag cccccagcga ggggcagact ggctctggcc tcaggtgggg          6704
Thr Thr  Leu
    2180

cgcaggagag ccaggggaaa agtgcctcat agttaggaaa gtttaggcac tagttgggag     6764

taatattcaa ttaattagac ttttgtataa gagatgtcat gcctcaagaa agccataaac     6824

ctggtaggaa caggtcccaa gcggttgagc ctggcagagt accatgcgct cggccccagc     6884

tgcaggaaac agcaggcccc gccctctcac agaggatggg tgaggaggcc agacctgccc     6944

tgccccattg tccagatggg cactgctgtg gagtctgctt ctcccatgta ccagggcacc     7004

aggcccaccc aactgaaggc atggcggcgg ggtgcagggg aaagttaaag gtgatgacga     7064

tcatcacacc tcgtgtcgtt acctcagcca tcggtctagc atatcagtca ctgggcccaa     7124

catatccatt tttaaaccct ttcccccaaa tacactgcgt cctggttcct gtttagctgt     7184

tctgaaata                                                             7193


<210>   20
<211>   2181
<212>   PRT
<213>   Homo sapiens
<400>   20
Met Met Met Met Met Met Lys Lys Met Gln His Gln Arg Gln Gln
1               5               10              15


Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu
            20              25              30


Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln
        35              40              45


Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
    50              55              60


Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
65              70              75              80


Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
                85              90              95


Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
            100             105             110


Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
        115             120             125


Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
    130             135             140


Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145             150             155             160
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132

```
Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
            165                 170                 175

Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180                 185                 190

Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
            195                 200                 205

Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
            210                 215                 220

Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225                 230                 235                 240

Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
            245                 250                 255

Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260                 265                 270

His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
            275                 280                 285

Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
    290                 295                 300

Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305                 310                 315                 320

Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
            325                 330                 335

Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
            340                 345                 350

Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
        355                 360                 365

Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val
    370                 375                 380

Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu
385                 390                 395                 400

Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
            405                 410                 415

Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
            420                 425                 430

Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
        435                 440                 445

Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
    450                 455                 460
```

133

Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465   470   475   480

Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp
            485   490   495

Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp
            500   505   510

Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp
            515   520   525

Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr
            530   535   540

Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile
545   550   555   560

Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp
            565   570   575

Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val
            580   585   590

Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn
            595   600   605

Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu
            610   615   620

Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys
625   630   635   640

Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu
            645   650   655

Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser
            660   665   670

Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly
            675   680   685

Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys
            690   695   700

Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln
705   710   715   720

Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met
            725   730   735

Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe
            740   745   750

Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu
            755   760   765

134

```
Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala
    770             775             780

Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys
785             790             795             800

Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile
            805             810             815

Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp
        820             825             830

Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu
        835             840             845

Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg
    850             855             860

Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile
865             870             875             880

Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg
            885             890             895

Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile
        900             905             910

Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro
        915             920             925

Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr
    930             935             940

Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr
945             950             955             960

Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn
            965             970             975

Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile
            980             985             990

Gln Ser Ser Ala Ile Ser Val Val  Lys Ile Leu Arg Val  Leu Arg Val
        995             1000            1005

Leu Arg  Pro Leu Arg Ala Ile  Asn Arg Ala Lys Gly  Leu Lys His
    1010            1015            1020

Val Val  Gln Cys Val Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile
    1025            1030            1035

Met Ile  Val Thr Thr Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly
    1040            1045            1050

Val Gln  Leu Phe Lys Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala
    1055            1060            1065
```

135

Lys Ser Asn Pro Glu Glu Cys Arg Gly Leu Phe Ile Leu Tyr Lys
    1070   1075   1080

Asp Gly Asp Val Asp Ser Pro Val Val Arg Glu Arg Ile Trp Gln
    1085   1090   1095

Asn Ser Asp Phe Asn Phe Asp Asn Val Leu Ser Ala Met Met Ala
    1100   1105   1110

Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Ala Leu Leu Tyr
    1115   1120   1125

Lys Ala Ile Asp Ser Asn Gly Glu Asn Ile Gly Pro Ile Tyr Asn
    1130   1135   1140

His Arg Val Glu Ile Ser Ile Phe Phe Ile Ile Tyr Ile Ile Ile
    1145   1150   1155

Val Ala Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val
    1160   1165   1170

Thr Phe Gln Glu Gln Gly Glu Lys Glu Tyr Lys Asn Cys Glu Leu
    1175   1180   1185

Asp Lys Asn Gln Arg Gln Cys Val Glu Tyr Ala Leu Lys Ala Arg
    1190   1195   1200

Pro Leu Arg Arg Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Lys Phe
    1205   1210   1215

Trp Tyr Val Val Asn Ser Ser Pro Phe Glu Tyr Met Met Phe Val
    1220   1225   1230

Leu Ile Met Leu Asn Thr Leu Cys Leu Ala Met Gln His Tyr Glu
    1235   1240   1245

Gln Ser Lys Met Phe Asn Asp Ala Met Asp Ile Leu Asn Met Val
    1250   1255   1260

Phe Thr Gly Val Phe Thr Val Glu Met Val Leu Lys Val Ile Ala
    1265   1270   1275

Phe Lys Pro Lys Gly Tyr Phe Ser Asp Ala Trp Asn Thr Phe Asp
    1280   1285   1290

Ser Leu Ile Val Ile Gly Ser Ile Ile Asp Val Ala Leu Ser Glu
    1295   1300   1305

Ala Asp Pro Thr Glu Ser Glu Asn Val Pro Val Pro Thr Ala Thr
    1310   1315   1320

Pro Gly Asn Ser Glu Glu Ser Asn Arg Ile Ser Ile Thr Phe Phe
    1325   1330   1335

Arg Leu Phe Arg Val Met Arg Leu Val Lys Leu Leu Ser Arg Gly
    1340   1345   1350

136

```
Glu Gly  Ile Arg Thr Leu Leu  Trp Thr Phe Ile Lys  Ser Phe Gln
    1355              1360              1365

Ala Leu  Pro Tyr Val Ala Leu  Leu Ile Ala Met Leu  Phe Phe Ile
    1370              1375              1380

Tyr Ala  Val Ile Gly Met Gln  Met Phe Gly Lys Val  Ala Met Arg
    1385              1390              1395

Asp Asn  Asn Gln Ile Asn Arg  Asn Asn Asn Phe Gln  Thr Phe Pro
    1400              1405              1410

Gln Ala  Val Leu Leu Leu Phe  Arg Cys Ala Thr Gly  Glu Ala Trp
    1415              1420              1425

Gln Glu  Ile Met Leu Ala Cys  Leu Pro Gly Lys Leu  Cys Asp Pro
    1430              1435              1440

Glu Ser  Asp Tyr Asn Pro Gly  Glu Glu Tyr Thr Cys  Gly Ser Asn
    1445              1450              1455

Phe Ala  Ile Val Tyr Phe Ile  Ser Phe Tyr Met Leu  Cys Ala Phe
    1460              1465              1470

Leu Ile  Ile Asn Leu Phe Val  Ala Val Ile Met Asp  Asn Phe Asp
    1475              1480              1485

Tyr Leu  Thr Arg Asp Trp Ser  Ile Leu Gly Pro His  His Leu Asp
    1490              1495              1500

Glu Phe  Lys Arg Ile Trp Ser  Glu Tyr Asp Pro Glu  Ala Lys Gly
    1505              1510              1515

Arg Ile  Lys His Leu Asp Val  Val Thr Leu Leu Arg  Arg Ile Gln
    1520              1525              1530

Pro Pro  Leu Gly Phe Gly Lys  Leu Cys Pro His Arg  Val Ala Cys
    1535              1540              1545

Lys Arg  Leu Val Ala Met Asn  Met Pro Leu Asn Ser  Asp Gly Thr
    1550              1555              1560

Val Met  Phe Asn Ala Thr Leu  Phe Ala Leu Val Arg  Thr Ala Leu
    1565              1570              1575

Lys Ile  Lys Thr Glu Gly Asn  Leu Glu Gln Ala Asn  Glu Glu Leu
    1580              1585              1590

Arg Ala  Val Ile Lys Lys Ile  Trp Lys Lys Thr Ser  Met Lys Leu
    1595              1600              1605

Leu Asp  Gln Val Val Pro Pro  Ala Gly Asp Asp Glu  Val Thr Val
    1610              1615              1620

Gly Lys  Phe Tyr Ala Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys
    1625              1630              1635
```

137

```
Phe Lys  Lys Arg Lys Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala
    1640              1645              1650

Lys Asn  Thr Thr Ile Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His
    1655              1660              1665

Asp Ile  Gly Pro Glu Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln
    1670              1675              1680

Asp Asp  Glu Pro Glu Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val
    1685              1690              1695

Phe Lys  Arg Asn Gly Ala Leu  Leu Gly Asn His Val  Asn His Val
    1700              1705              1710

Asn Ser  Asp Arg Arg Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His
    1715              1720              1725

Arg Pro  Leu His Val Gln Arg  Pro Ser Ile Pro Pro  Ala Ser Asp
    1730              1735              1740

Thr Glu  Lys Pro Leu Phe Pro  Pro Ala Gly Asn Ser  Val Cys His
    1745              1750              1755

Asn His  His Asn His Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser
    1760              1765              1770

Thr Asn  Ala Asn Leu Asn Asn  Ala Asn Met Ser Lys  Ala Ala His
    1775              1780              1785

Gly Lys  Arg Pro Ser Ile Gly  Asn Leu Glu His Val  Ser Glu Asn
    1790              1795              1800

Gly His  His Ser Ser His Lys  His Asp Arg Glu Pro  Gln Arg Arg
    1805              1810              1815

Ser Ser  Val Lys Arg Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser
    1820              1825              1830

Asp Ser  Gly Asp Glu Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro
    1835              1840              1845

Glu Ile  His Gly Tyr Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln
    1850              1855              1860

Glu Tyr  Phe Ser Ser Glu Glu  Cys Tyr Glu Asp Asp  Ser Ser Pro
    1865              1870              1875

Thr Trp  Ser Arg Gln Asn Tyr  Gly Tyr Tyr Ser Arg  Tyr Pro Gly
    1880              1885              1890

Arg Asn  Ile Asp Ser Glu Arg  Pro Arg Gly Tyr His  His Pro Gln
    1895              1900              1905

Gly Phe  Leu Glu Asp Asp Asp  Ser Pro Val Cys Tyr  Asp Ser Arg
    1910              1915              1920
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Arg Ser  Pro Arg Arg Arg Leu  Leu Pro Pro Thr Pro  Ala Ser His
    1925             1930             1935

Arg Arg  Ser Ser Phe Asn Phe  Glu Cys Leu Arg Arg  Gln Ser Ser
    1940             1945             1950

Gln Glu  Glu Val Pro Ser Ser  Pro Ile Phe Pro His  Arg Thr Ala
    1955             1960             1965

Leu Pro  Leu His Leu Met Gln  Gln Gln Ile Met Ala  Val Ala Gly
    1970             1975             1980

Leu Asp  Ser Ser Lys Ala Gln  Lys Tyr Ser Pro Ser  His Ser Thr
    1985             1990             1995

Arg Ser  Trp Ala Thr Pro Pro  Ala Thr Pro Pro Tyr  Arg Asp Trp
    2000             2005             2010

Thr Pro  Cys Tyr Thr Pro Leu  Ile Gln Val Glu Gln  Ser Glu Ala
    2015             2020             2025

Leu Asp  Gln Val Asn Gly Ser  Leu Pro Ser Leu His  Arg Ser Ser
    2030             2035             2040

Trp Tyr  Thr Asp Glu Pro Asp  Ile Ser Tyr Arg Thr  Phe Thr Pro
    2045             2050             2055

Ala Ser  Leu Thr Val Pro Ser  Ser Phe Arg Asn Lys  Asn Ser Asp
    2060             2065             2070

Lys Gln  Arg Ser Ala Asp Ser  Leu Val Glu Ala Val  Leu Ile Ser
    2075             2080             2085

Glu Gly  Leu Gly Arg Tyr Ala  Arg Asp Pro Lys Phe  Val Ser Ala
    2090             2095             2100

Thr Lys  His Glu Ile Ala Asp  Ala Cys Asp Leu Thr  Ile Asp Glu
    2105             2110             2115

Met Glu  Ser Ala Ala Ser Thr  Leu Leu Asn Gly Asn  Val Arg Pro
    2120             2125             2130

Arg Ala  Asn Gly Asp Val Gly  Pro Leu Ser His Arg  Gln Asp Tyr
    2135             2140             2145

Glu Leu  Gln Asp Phe Gly Pro  Gly Tyr Ser Asp Glu  Glu Pro Asp
    2150             2155             2160

Pro Gly  Arg Asp Glu Glu Asp  Leu Ala Asp Glu Met  Ile Cys Ile
    2165             2170             2175

Thr Thr  Leu
    2180
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gagcagctag cataatcctc ccgcccccac cccgctggct cagcagggca ggcttcgccc     120

ggcaagctca gcggcccagt ccccaaggcg gggaacactg gggacgcagg gaagagaggg     180

ccgcggggtg ggggagcagc aggaagcgcc gtggccaggg aagcc atg gag cca tcc     237
                                                  Met Glu Pro Ser
                                                   1

tca ccc cag gat gag ggc ctg agg aag aaa cag ccc aag aag ccc ctg      285
Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro Lys Lys Pro Leu
  5              10                  15                  20

ccc gag gtc ctg ccc agg ccg ccg cgg gct ctg ttc tgc ctg acc ctg      333
Pro Glu Val Leu Pro Arg Pro Pro Arg Ala Leu Phe Cys Leu Thr Leu
                 25                  30                  35

cag aac ccg ctg agg aag gcg tgc atc agc atc gtg gaa tgg aaa ccc      381
Gln Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val Glu Trp Lys Pro
             40                  45                  50

ttc gag acc atc atc ctg ctc acc atc ttt gcc aac tgt gtg gcc ctg      429
Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn Cys Val Ala Leu
         55                  60                  65

gcc gtg tac ctg ccc atg ccc gag gat gac aac aac tcc ctg aac ctg      477
Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn Ser Leu Asn Leu
     70                  75                  80

ggc ctg gag aag ctg gag tac ttc ttc ctc acc gtc ttc tcc atc gaa      525
Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Thr Val Phe Ser Ile Glu
 85                  90                  95                 100

gcc gcc atg aag atc atc gcc tac ggc ttc ctg ttc cac cag gac gcc      573
Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe His Gln Asp Ala
                105                 110                 115

tac ctg cgc agc ggc tgg aac gtg ctg gac ttc atc atc gtc ttc ctg      621
Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Ile Ile Val Phe Leu
             120                 125                 130

ggg gtc ttc acg gcg att ctg gaa cag gtc aac gtc atc cag agc aac      669
Gly Val Phe Thr Ala Ile Leu Glu Gln Val Asn Val Ile Gln Ser Asn
             135                 140                 145

acg gcc ccg atg agc agc aaa gga gcc ggc ctg gac gtc aag gcc ctg      717
Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp Val Lys Ala Leu
     150                 155                 160

agg gcc ttc cgt gtg ctc aga ccc ctc cgg ctg gtg tcg ggg gtg cct      765
Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro
165                 170                 175                 180

agt ttg cag gtg gtc ctc aac tcc atc ttc aag gcc atg ctc ccc ctg      813
Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala Met Leu Pro Leu
                185                 190                 195

ttc cac atc gcc ctg ctc gtc ctc ttc atg gtc atc atc tac gcc atc      861
Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile Ile Tyr Ala Ile
             200                 205                 210
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atc ggg ctg gag ctc ttc aag ggc aag atg cac aag acc tgc tac tac        909
Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys Thr Cys Tyr Tyr
        215             220             225

atc ggg aca gac atc gtg gcc aca gtg gag aat gag aag ccc tcg ccc        957
Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu Lys Pro Ser Pro
        230             235             240

tgc gct agg acg ggc tcg ggg cgc ccc tgc acc atc aac ggc agc gag       1005
Cys Ala Arg Thr Gly Ser Gly Arg Pro Cys Thr Ile Asn Gly Ser Glu
245             250             255             260

tgc cgg ggc ggc tgg ccg ggg ccc aac cac ggc atc acg cac ttc gac       1053
Cys Arg Gly Gly Trp Pro Gly Pro Asn His Gly Ile Thr His Phe Asp
                265             270             275

aac ttc ggc ttc tcc atg ctc acc gtg tac cag tgc atc acc atg gag       1101
Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys Ile Thr Met Glu
                280             285             290

ggc tgg aca gat gtc ctc tac tgg gtc aac gat gcc atc ggg aac gag       1149
Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Asn Glu
                295             300             305

tgg ccc tgg atc tac ttt gtc act ctc atc ctg ctg ggg tcc ttc ttc       1197
Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu Gly Ser Phe Phe
        310             315             320

atc ctc aac ctg gtg ctg ggc gtc ctg agt ggg gaa ttc acc aag gag       1245
Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu Phe Thr Lys Glu
325             330             335             340

cgg gag aag gcc aag tcc agg gga acc ttc cag aag ctg cgg gag aag       1293
Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys Leu Arg Glu Lys
                345             350             355

cag cag ctg gag gag gac ctt cgg ggc tac atg agc tgg atc acg cag       1341
Gln Gln Leu Glu Glu Asp Leu Arg Gly Tyr Met Ser Trp Ile Thr Gln
                360             365             370

ggc gag gtc atg gac gtg gag gac ctg aga gaa gga aag ctg tcc ttg       1389
Gly Glu Val Met Asp Val Glu Asp Leu Arg Glu Gly Lys Leu Ser Leu
                375             380             385

gaa gag gga ggc tcc gac acg gaa agc ctg tac gaa atc gag ggc ttg       1437
Glu Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu Ile Glu Gly Leu
        390             395             400

aac aaa atc atc cag ttc atc cga cac tgg agg cag tgg aac cgt gtc       1485
Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln Trp Asn Arg Val
405             410             415             420

ttt cgc tgg aag tgc cat gac ctg gtg aag tcg aga gtc ttc tac tgg       1533
Phe Arg Trp Lys Cys His Asp Leu Val Lys Ser Arg Val Phe Tyr Trp
                425             430             435

ctg gtc atc ctg atc gtg gcc ctc aac acc ctg tcc atc gcc tcg gag       1581
Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser Ile Ala Ser Glu
        440             445             450

cac cac aac cag ccg ctc tgg ctg acc cac ttg caa gac atc gcc aat       1629
His His Asn Gln Pro Leu Trp Leu Thr His Leu Gln Asp Ile Ala Asn
        455             460             465

cga gtg ctg ctg tca ctc ttc acc atc gag atg ctg ctg aag atg tac       1677
Arg Val Leu Leu Ser Leu Phe Thr Ile Glu Met Leu Leu Lys Met Tyr
        470             475             480

ggg ctg ggc ctg cgc cag tac ttc atg tcc atc ttc aac cgc ttc gac       1725
Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe Asn Arg Phe Asp
485             490             495             500

tgc ttc gtg gtg tgc agc ggc atc ctg gag ctg ctg ctg gtg gag tcg       1773
Cys Phe Val Val Cys Ser Gly Ile Leu Glu Leu Leu Leu Val Glu Ser
        505             510             515
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ggc gcc atg acg ccg ctg ggc atc tcc gtg ttg cgc tgc atc cgc ctc      1821
Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg Cys Ile Arg Leu
            520             525             530

ctg agg ctc ttc aag atc acc aag tac tgg acg tcg ctc agc aac ctg      1869
Leu Arg Leu Phe Lys Ile Thr Lys Tyr Trp Thr Ser Leu Ser Asn Leu
            535             540             545

gtg gcc tcc ctg ctc aac tcc atc cgc tcc atc gcc tcg ctg ctg ctg      1917
Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala Ser Leu Leu Leu
            550             555             560

ctg ctc ttc ctc ttc atc atc atc ttc gcc ctg ctg ggc atg cag ctc      1965
Leu Leu Phe Leu Phe Ile Ile Ile Phe Ala Leu Leu Gly Met Gln Leu
565             570             575             580

ttc ggg ggg cgg tac gac ttc gag gac acg gaa gtg cga cgc agc aac      2013
Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val Arg Arg Ser Asn
            585             590             595

ttc gac aac ttc ccc cag gcc ctc atc agc gtc ttc cag gtg ctg acg      2061
Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe Gln Val Leu Thr
            600             605             610

ggt gag gac tgg aac tcc gtg atg tac aac ggg atc atg gcc tac gga      2109
Gly Glu Asp Trp Asn Ser Val Met Tyr Asn Gly Ile Met Ala Tyr Gly
            615             620             625

ggc ccg tcc tac ccg ggc gtt ctc gtg tgc atc tat ttc atc atc ctt      2157
Gly Pro Ser Tyr Pro Gly Val Leu Val Cys Ile Tyr Phe Ile Ile Leu
            630             635             640

ttt gtc tgc ggc aac tat atc ctg ctg aat gtc ttc ctg gcc atc gcc      2205
Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala Ile Ala
645             650             655             660

gtg gac aac ctg gcc gag gcg gag agc ctg act tcc gcg caa aag gcc      2253
Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser Ala Gln Lys Ala
            665             670             675

aag gcc gag gag agg aaa cgc agg aag atg tcc agg ggt ctc cct gac      2301
Lys Ala Glu Glu Arg Lys Arg Arg Lys Met Ser Arg Gly Leu Pro Asp
            680             685             690

aag aca gag gag gag aag tct gtg atg gcc aag aag ctg gag cag aag      2349
Lys Thr Glu Glu Glu Lys Ser Val Met Ala Lys Lys Leu Glu Gln Lys
            695             700             705

ccc aag ggg gag ggc atc ccc acc act gcc aag ctc aag gtc gat gag      2397
Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu Lys Val Asp Glu
            710             715             720

ttc gaa tct aac gtc aac gag gtg aag gac ccc tac cct tca gct gac      2445
Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr Pro Ser Ala Asp
725             730             735             740

ttc cca ggg gat gat gag gag gac gag cct gag atc cca gtg agc ccc      2493
Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile Pro Val Ser Pro
            745             750             755

cga ccg cgc ccg ctg gcc gag ctg cag ctc aaa gag aag gca gtg ccc      2541
Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu Lys Ala Val Pro
            760             765             770

atc ccg gaa gcc agc tcc ttc ttc atc ttc agt ccc acc aat aag gtc      2589
Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro Thr Asn Lys Val
            775             780             785

cgt gtc ctg tgt cac cgc atc gtc aac gcc acc tgg ttc acc aac ttc      2637
Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp Phe Thr Asn Phe
            790             795             800

atc ctg ctc ttc atc ctg ctc agc agt gct gcg ctg gcc gcc gag gac      2685
Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp
805             810             815             820
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ccc atc cgg gcg gag tcc gtg agg aat cag atc ctt gga tat ttt gat      2733
Pro Ile Arg Ala Glu Ser Val Arg Asn Gln Ile Leu Gly Tyr Phe Asp
            825                 830                 835

att gcc ttc acc tct gtc ttc act gtg gag att gtc ctc aag atg acg      2781
Ile Ala Phe Thr Ser Val Phe Thr Val Glu Ile Val Leu Lys Met Thr
            840                 845                 850

acc tac ggc gcc ttc ctg cac aag ggc tcc ttc tgc cgc aac tac ttc      2829
Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys Arg Asn Tyr Phe
            855                 860                 865

aac atc ctg gac ctg ctg gtg gtg gct gtg tct ctc atc tcc atg ggt      2877
Asn Ile Leu Asp Leu Leu Val Val Ala Val Ser Leu Ile Ser Met Gly
        870                 875                 880

ctc gag tcc agc acc atc tcc gtg gta aag atc ctg aga gtg cta agg      2925
Leu Glu Ser Ser Thr Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg
885                 890                 895                 900

gtg ctc cgg ccc ctg cga gcc atc aac aga gcc aaa ggg ttg aag cac      2973
Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys Gly Leu Lys His
                905                 910                 915

gtg gtc cag tgc gtg ttc gtg gcc atc cgc acc atc ggg aac atc gtc      3021
Val Val Gln Cys Val Phe Val Ala Ile Arg Thr Ile Gly Asn Ile Val
                920                 925                 930

ctg gtc acc acg ctc ctg cag ttc atg ttc gcc tgc att ggt gtc cag      3069
Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys Ile Gly Val Gln
            935                 940                 945

ctc ttc aag ggc aag ttc ttc agc tgc aac gac cta tcc aag atg aca      3117
Leu Phe Lys Gly Lys Phe Phe Ser Cys Asn Asp Leu Ser Lys Met Thr
        950                 955                 960

gaa gag gag tgc agg ggc tac tac tat gtg tac aag gac ggg gac ccc      3165
Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys Asp Gly Asp Pro
965                 970                 975                 980

acg cag atg gag ctg cgc ccc cgc cag tgg ata cac aat gac ttc cac      3213
Thr Gln Met Glu Leu Arg Pro Arg Gln Trp Ile His Asn Asp Phe His
                985                 990                 995

ttt gac aac gtg  ctg tcg gcc atg atg  tcg ctc ttc acg gtg  tcc       3258
Phe Asp Asn Val  Leu Ser Ala Met Met  Ser Leu Phe Thr Val  Ser
            1000                1005                1010

acc ttc gag gga  tgg ccc cag ctg ctg  tac agg gcc ata gac  tcc       3303
Thr Phe Glu Gly  Trp Pro Gln Leu Leu  Tyr Arg Ala Ile Asp  Ser
            1015                1020                1025

aac gag gag gac  atg ggc ccc gtt tac  aac aac cga gtg gag  atg       3348
Asn Glu Glu Asp  Met Gly Pro Val Tyr  Asn Asn Arg Val Glu  Met
            1030                1035                1040

gcc atc ttc ttc  atc atc tac atc atc  ctc att gcc ttc ttc  atg       3393
Ala Ile Phe Phe  Ile Ile Tyr Ile Ile  Leu Ile Ala Phe Phe  Met
            1045                1050                1055

atg aac atc ttt  gtg ggc ttt gtc atc  gtc acc ttc cag gag  cag       3438
Met Asn Ile Phe  Val Gly Phe Val Ile  Val Thr Phe Gln Glu  Gln
            1060                1065                1070

ggg gag aca gag  tac aag aac tgc gag  ctg gac aag aac cag  cgc       3483
Gly Glu Thr Glu  Tyr Lys Asn Cys Glu  Leu Asp Lys Asn Gln  Arg
            1075                1080                1085

cag tgt gtg cag  tat gcc ctg aag gcc  cgc cca ctt cgg tgc  tac       3528
Gln Cys Val Gln  Tyr Ala Leu Lys Ala  Arg Pro Leu Arg Cys  Tyr
            1090                1095                1100

atc ccc aag aac  cca tac cag tac cag  gtg tgg tac gtc gtc  acc       3573
Ile Pro Lys Asn  Pro Tyr Gln Tyr Gln  Val Trp Tyr Val Val  Thr
            1105                1110                1115
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143

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tcc tcc tac ttt  gaa tac ctg atg ttc  gcc ctc atc atg ctc  aac     3618
Ser Ser Tyr Phe  Glu Tyr Leu Met Phe  Ala Leu Ile Met Leu  Asn
            1120              1125              1130

acc atc tgc ctg  ggc atg cag cac tac  cac cag tcg gag gag  atg     3663
Thr Ile Cys Leu  Gly Met Gln His Tyr  His Gln Ser Glu Glu  Met
            1135              1140              1145

aac cac atc tcg  gac atc ctc aac gtg  gcc ttc acc atc atc  ttc     3708
Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr Ile Ile  Phe
            1150              1155              1160

aca ctg gag atg  atc ctc aag ctc ttg  gcg ttc aag gcc agg  ggc     3753
Thr Leu Glu Met  Ile Leu Lys Leu Leu  Ala Phe Lys Ala Arg  Gly
            1165              1170              1175

tat ttc gga gac  ccc tgg aat gtg ttc  gac ttc ctg atc gtc  atc     3798
Tyr Phe Gly Asp  Pro Trp Asn Val Phe  Asp Phe Leu Ile Val  Ile
            1180              1185              1190

ggc agc atc att  gac gtc atc ctc agc  gag atc gac act ttc  ctg     3843
Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp Thr Phe  Leu
            1195              1200              1205

gcc tcc agc ggg  gga ctg tat tgc ctg  ggt ggc ggc tgc ggg  aac     3888
Ala Ser Ser Gly  Gly Leu Tyr Cys Leu  Gly Gly Gly Cys Gly  Asn
            1210              1215              1220

gtt gac cca gac  gag agc gcc cgc atc  tcc agt gcc ttc ttc  cgc     3933
Val Asp Pro Asp  Glu Ser Ala Arg Ile  Ser Ser Ala Phe Phe  Arg
            1225              1230              1235

ctg ttc cgg gtc  atg agg ctg atc aag  ctg ctg agt cgg gcc  gag     3978
Leu Phe Arg Val  Met Arg Leu Ile Lys  Leu Leu Ser Arg Ala  Glu
            1240              1245              1250

ggc gtg cgc acg  ctg ctg tgg acg ttc  atc aag tcc ttc cag  gcc     4023
Gly Val Arg Thr  Leu Leu Trp Thr Phe  Ile Lys Ser Phe Gln  Ala
            1255              1260              1265

ctg ccc tac gtg  gcc ctg ctc atc gtc  atg ctg ttc ttc atc  tac     4068
Leu Pro Tyr Val  Ala Leu Leu Ile Val  Met Leu Phe Phe Ile  Tyr
            1270              1275              1280

gcc gtc atc ggc  atg cag atg ttt gga  aag atc gcc ctg gtg  gac     4113
Ala Val Ile Gly  Met Gln Met Phe Gly  Lys Ile Ala Leu Val  Asp
            1285              1290              1295

ggg acc cag atc  aac cgc aac aac aac  ttc cag acc ttc ccg  cag     4158
Gly Thr Gln Ile  Asn Arg Asn Asn Asn  Phe Gln Thr Phe Pro  Gln
            1300              1305              1310

gcc gtg ctg ctg  ctc ttc agg tgt gcg  aca ggg gag gcg tgg  caa     4203
Ala Val Leu Leu  Leu Phe Arg Cys Ala  Thr Gly Glu Ala Trp  Gln
            1315              1320              1325

gag atc ctg ctg  gcc tgc agc tac ggg  aag ttg tgc gac cca  gag     4248
Glu Ile Leu Leu  Ala Cys Ser Tyr Gly  Lys Leu Cys Asp Pro  Glu
            1330              1335              1340

tca gac tac gcc  ccg ggc gag gag tac  acg tgt ggc acc aac  ttc     4293
Ser Asp Tyr Ala  Pro Gly Glu Glu Tyr  Thr Cys Gly Thr Asn  Phe
            1345              1350              1355

gcc tac tac tac  ttc atc agc ttc tac  atg ctc tgc gcc ttc  ctg     4338
Ala Tyr Tyr Tyr  Phe Ile Ser Phe Tyr  Met Leu Cys Ala Phe  Leu
            1360              1365              1370

atc atc aac ctc  ttc gtg gct gtc atc  atg gac aac ttt gac  tac     4383
Ile Ile Asn Leu  Phe Val Ala Val Ile  Met Asp Asn Phe Asp  Tyr
            1375              1380              1385

ctg aca cgc gac  tgg tcc atc ctg ggc  cct cac cac ctg gac  gag     4428
Leu Thr Arg Asp  Trp Ser Ile Leu Gly  Pro His His Leu Asp  Glu
            1390              1395              1400
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ttc aag gct atc   tgg gca gag tat gac   cca gag gcc aag ggg   cga   4473
Phe Lys Ala Ile   Trp Ala Glu Tyr Asp   Pro Glu Ala Lys Gly   Arg
            1405                 1410                   1415

atc aag cac ctg   gac gtg gtg acc ctg   ctg aga agg atc cag   ccc   4518
Ile Lys His Leu   Asp Val Val Thr Leu   Leu Arg Arg Ile Gln   Pro
            1420                 1425                   1430

cct ctg ggc ttc   ggg aag ttc tgt cca   cac cgg gtg gcc tgt   aag   4563
Pro Leu Gly Phe   Gly Lys Phe Cys Pro   His Arg Val Ala Cys   Lys
            1435                 1440                   1445

cgc ctg gtg ggc   atg aac atg ccc ctg   aac agt gac ggc acg   gtc   4608
Arg Leu Val Gly   Met Asn Met Pro Leu   Asn Ser Asp Gly Thr   Val
            1450                 1455                   1460

acc ttc aat gcc   acg ctc ttt gcc ctg   gtg cgc acg gcc ctc   aag   4653
Thr Phe Asn Ala   Thr Leu Phe Ala Leu   Val Arg Thr Ala Leu   Lys
            1465                 1470                   1475

atc aag aca gaa   ggt aac ttt gag cag   gcc aac gag gag ctg   agg   4698
Ile Lys Thr Glu   Gly Asn Phe Glu Gln   Ala Asn Glu Glu Leu   Arg
            1480                 1485                   1490

gcc atc atc aag   aag atc tgg aag aga   acc agc atg aag ctg   ctg   4743
Ala Ile Ile Lys   Lys Ile Trp Lys Arg   Thr Ser Met Lys Leu   Leu
            1495                 1500                   1505

gac cag gtc atc   cct ccc ata gga gat   gac gag gtg acc gtg   ggg   4788
Asp Gln Val Ile   Pro Pro Ile Gly Asp   Asp Glu Val Thr Val   Gly
            1510                 1515                   1520

aag ttc tac gcc   aca ttc ctc atc cag   gag cac ttc cgg aag   ttc   4833
Lys Phe Tyr Ala   Thr Phe Leu Ile Gln   Glu His Phe Arg Lys   Phe
            1525                 1530                   1535

atg aag cgc cag   gag gaa tat tat ggg   tat cgg ccc aag aag   gac   4878
Met Lys Arg Gln   Glu Glu Tyr Tyr Gly   Tyr Arg Pro Lys Lys   Asp
            1540                 1545                   1550

acc gtg cag atc   cag gct ggg ctg cgg   acc ata gag gag gag   gcg   4923
Thr Val Gln Ile   Gln Ala Gly Leu Arg   Thr Ile Glu Glu Glu   Ala
            1555                 1560                   1565

gcc cct gag atc   cgc cgc acc atc tca   gga gac ctg acc gcc   gag   4968
Ala Pro Glu Ile   Arg Arg Thr Ile Ser   Gly Asp Leu Thr Ala   Glu
            1570                 1575                   1580

gag gag ctg gag   aga gcc atg gtg gag   gct gcg atg gag gag   agg   5013
Glu Glu Leu Glu   Arg Ala Met Val Glu   Ala Ala Met Glu Glu   Arg
            1585                 1590                   1595

atc ttc cgg agg   acg gga ggc ctg ttt   ggc cag gtg gac acc   ttc   5058
Ile Phe Arg Arg   Thr Gly Gly Leu Phe   Gly Gln Val Asp Thr   Phe
            1600                 1605                   1610

ctg gaa agg acc   aac tcc ctg ccc ccg   gtg atg gcc aac caa   aga   5103
Leu Glu Arg Thr   Asn Ser Leu Pro Pro   Val Met Ala Asn Gln   Arg
            1615                 1620                   1625

ccg ctc cag ttt   gct gag ata gaa atg   gaa gag ctt gag tcg   cct   5148
Pro Leu Gln Phe   Ala Glu Ile Glu Met   Glu Glu Leu Glu Ser   Pro
            1630                 1635                   1640

gtc ttc ttg gag   gac ttc cct caa gat   gca aga acc aac cct   ctc   5193
Val Phe Leu Glu   Asp Phe Pro Gln Asp   Ala Arg Thr Asn Pro   Leu
            1645                 1650                   1655

gct cgt gcc aat   acc aac aac gcc aat   gcc aat gtt gcc tat   ggc   5238
Ala Arg Ala Asn   Thr Asn Asn Ala Asn   Ala Asn Val Ala Tyr   Gly
            1660                 1665                   1670

aac agc aac cat   agc aac aac cag atg   ttt tcc agc gtc cac   tgt   5283
Asn Ser Asn His   Ser Asn Asn Gln Met   Phe Ser Ser Val His   Cys
            1675                 1680                   1685
```

```
gaa agg gag ttc   ccg gga gag gcg gag   aca ccg gct gcc gga   cga      5328
Glu Arg Glu Phe   Pro Gly Glu Ala Glu   Thr Pro Ala Ala Gly   Arg
            1690                   1695                   1700

gga gcc ctc agc   cac tcc cac agg gcc   ctg gga cct cac agc   aag      5373
Gly Ala Leu Ser   His Ser His Arg Ala   Leu Gly Pro His Ser   Lys
            1705                   1710                   1715

ccc tgt gct gga   aaa ctg aat ggg cag   ctg gtc cag ccg ggg   atg      5418
Pro Cys Ala Gly   Lys Leu Asn Gly Gln   Leu Val Gln Pro Gly   Met
            1720                   1725                   1730

ccc atc aac cag   gca cct cct gcc ccc   tgc cag cag cct agc   acg      5463
Pro Ile Asn Gln   Ala Pro Pro Ala Pro   Cys Gln Gln Pro Ser   Thr
            1735                   1740                   1745

gat ccc cca gag   cgc ggg cag agg agg   acc tcc ctg aca ggg   tct      5508
Asp Pro Pro Glu   Arg Gly Gln Arg Arg   Thr Ser Leu Thr Gly   Ser
            1750                   1755                   1760

ctg caa gac gaa   gca ccc cag agg agg   agc tcc gag ggg agc   acc      5553
Leu Gln Asp Glu   Ala Pro Gln Arg Arg   Ser Ser Glu Gly Ser   Thr
            1765                   1770                   1775

ccc agg cgc ccg   gct cct gct aca gct   ctg ctg atc caa gag   gct      5598
Pro Arg Arg Pro   Ala Pro Ala Thr Ala   Leu Leu Ile Gln Glu   Ala
            1780                   1785                   1790

ctg gtt cga ggg   ggc ctg gac acc ttg   gca gct gat gct ggc   ttc      5643
Leu Val Arg Gly   Gly Leu Asp Thr Leu   Ala Ala Asp Ala Gly   Phe
            1795                   1800                   1805

gtc acg gca aca   agc cag gcc ctg gca   gac gcc tgt cag atg   gaa      5688
Val Thr Ala Thr   Ser Gln Ala Leu Ala   Asp Ala Cys Gln Met   Glu
            1810                   1815                   1820

ccg gag gaa gta   gag gtc gca gcc aca   gag cta ctg aaa gcg   cga      5733
Pro Glu Glu Val   Glu Val Ala Ala Thr   Glu Leu Leu Lys Ala   Arg
            1825                   1830                   1835

gag tct gtc cag   ggc atg gcc agt gtc   ccg gga agc ctg agc   cgc      5778
Glu Ser Val Gln   Gly Met Ala Ser Val   Pro Gly Ser Leu Ser   Arg
            1840                   1845                   1850

agg tcc tcc ctg   ggc agc ctt gac cag   gtc cag ggc tcc cag   gaa      5823
Arg Ser Ser Leu   Gly Ser Leu Asp Gln   Val Gln Gly Ser Gln   Glu
            1855                   1860                   1865

acc ctt att cct   ccc agg ccg tga tggctgtggt gtccacatga ccaaggcgag      5877
Thr Leu Ile Pro   Pro Arg Pro
            1870

agggacagtg cgtgcagaag ctcagccctg catggcagcc tccctctgtc tcagccctcc      5937

tgctgagctg gggcggtctg gaaccgcacc aggaagccag gagcctcccc tggccagcaa      5997

gaggcatgat tctaaagcca tccagaaagg cctggtcagt gccactcccc agcaggacat      6057

taaagtctct aggtctgtgg cactgg                                          6083


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<213>   Oryctolagus cuniculus
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Met Glu Pro Ser Ser Pro Gln Asp Glu Gly Leu Arg Lys Lys Gln Pro
1               5                   10                  15


Lys Lys Pro Leu Pro Glu Val Leu Pro Arg Pro Pro Arg Ala Leu Phe
            20              25              30


Cys Leu Thr Leu Gln Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val
        35              40              45
```
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```
Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn
    50              55              60
Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn
65              70              75              80
Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Thr Val
                85              90              95
Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe
                100             105             110
His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Ile
        115             120             125
Ile Val Phe Leu Gly Val Phe Thr Ala Ile Leu Glu Gln Val Asn Val
    130             135             140
Ile Gln Ser Asn Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp
145             150             155             160
Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
                165             170             175
Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala
            180             185             190
Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile
        195             200             205
Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys
    210             215             220
Thr Cys Tyr Tyr Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu
225             230             235             240
Lys Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Pro Cys Thr Ile
            245             250             255
Asn Gly Ser Glu Cys Arg Gly Gly Trp Pro Gly Pro Asn His Gly Ile
            260             265             270
Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys
        275             280             285
Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala
    290             295             300
Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu
305             310             315             320
Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu
            325             330             335
Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys
        340             345             350
```

```
Leu Arg Glu Lys Gln Gln Leu Glu Glu Asp Leu Arg Gly Tyr Met Ser
        355             360             365

Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Leu Arg Glu Gly
        370             375             380

Lys Leu Ser Leu Glu Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu
385             390             395             400

Ile Glu Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln
                405             410             415

Trp Asn Arg Val Phe Arg Trp Lys Cys His Asp Leu Val Lys Ser Arg
            420             425             430

Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser
        435             440             445

Ile Ala Ser Glu His His Asn Gln Pro Leu Trp Leu Thr His Leu Gln
    450             455             460

Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Ile Glu Met Leu
465             470             475             480

Leu Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe
                485             490             495

Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Leu Leu
            500             505             510

Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg
            515             520             525

Cys Ile Arg Leu Leu Arg Leu Phe Lys Ile Thr Lys Tyr Trp Thr Ser
    530             535             540

Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala
545             550             555             560

Ser Leu Leu Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ala Leu Leu
            565             570             575

Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val
            580             585             590

Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe
            595             600             605

Gln Val Leu Thr Gly Glu Asp Trp Asn Ser Val Met Tyr Asn Gly Ile
    610             615             620

Met Ala Tyr Gly Gly Pro Ser Tyr Pro Gly Val Leu Val Cys Ile Tyr
625             630             635             640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe
            645             650             655
```

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```
Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser
        660                 665                 670

Ala Gln Lys Ala Lys Ala Glu Glu Arg Lys Arg Arg Lys Met Ser Arg
        675             680                 685

Gly Leu Pro Asp Lys Thr Glu Glu Glu Lys Ser Val Met Ala Lys Lys
    690                 695                 700

Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu
705             710                 715                 720

Lys Val Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr
            725                 730                 735

Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile
            740                 745                 750

Pro Val Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu
        755                 760                 765

Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro
    770                 775                 780

Thr Asn Lys Val Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp
785                 790                 795                 800

Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu
            805                 810                 815

Ala Ala Glu Asp Pro Ile Arg Ala Glu Ser Val Arg Asn Gln Ile Leu
        820                 825                 830

Gly Tyr Phe Asp Ile Ala Phe Thr Ser Val Phe Thr Val Glu Ile Val
    835                 840                 845

Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys
    850                 855                 860

Arg Asn Tyr Phe Asn Ile Leu Asp Leu Leu Val Val Ala Val Ser Leu
865                 870                 875                 880

Ile Ser Met Gly Leu Glu Ser Ser Thr Ile Ser Val Val Lys Ile Leu
            885                 890                 895

Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys
        900                 905         .       910

Gly Leu Lys His Val Val Gln Cys Val Phe Val Ala Ile Arg Thr Ile
    915                 920                 925

Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys
    930                 935                 940

Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Ser Cys Asn Asp Leu
945                 950                 955                 960
```

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```
Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys
            965             970                   975

Asp Gly Asp Pro Thr Gln Met Glu Leu Arg Pro Arg Gln Trp Ile His
            980             985             990

Asn Asp Phe His Phe Asp Asn Val  Leu Ser Ala Met Met  Ser Leu Phe
            995             1000             1005

Thr Val  Ser Thr Phe Glu Gly  Trp Pro Gln Leu Leu  Tyr Arg Ala
    1010             1015             1020

Ile Asp  Ser Asn Glu Glu Asp  Met Gly Pro Val Tyr  Asn Asn Arg
    1025             1030             1035

Val Glu  Met Ala Ile Phe Phe  Ile Ile Tyr Ile Ile  Leu Ile Ala
    1040             1045             1050

Phe Phe  Met Met Asn Ile Phe  Val Gly Phe Val Ile  Val Thr Phe
    1055             1060             1065

Gln Glu  Gln Gly Glu Thr Glu  Tyr Lys Asn Cys Glu  Leu Asp Lys
    1070             1075             1080

Asn Gln  Arg Gln Cys Val Gln  Tyr Ala Leu Lys Ala  Arg Pro Leu
    1085             1090             1095

Arg Cys  Tyr Ile Pro Lys Asn  Pro Tyr Gln Tyr Gln  Val Trp Tyr
    1100             1105             1110

Val Val  Thr Ser Ser Tyr Phe  Glu Tyr Leu Met Phe  Ala Leu Ile
    1115             1120             1125

Met Leu  Asn Thr Ile Cys Leu  Gly Met Gln His Tyr  His Gln Ser
    1130             1135             1140

Glu Glu  Met Asn His Ile Ser  Asp Ile Leu Asn Val  Ala Phe Thr
    1145             1150             1155

Ile Ile  Phe Thr Leu Glu Met  Ile Leu Lys Leu Leu  Ala Phe Lys
    1160             1165             1170

Ala Arg  Gly Tyr Phe Gly Asp  Pro Trp Asn Val Phe  Asp Phe Leu
    1175             1180             1185

Ile Val  Ile Gly Ser Ile Ile  Asp Val Ile Leu Ser  Glu Ile Asp
    1190             1195             1200

Thr Phe  Leu Ala Ser Ser Gly  Gly Leu Tyr Cys Leu  Gly Gly Gly
    1205             1210             1215

Cys Gly  Asn Val Asp Pro Asp  Glu Ser Ala Arg Ile  Ser Ser Ala
    1220             1225             1230

Phe Phe  Arg Leu Phe Arg Val  Met Arg Leu Ile Lys  Leu Leu Ser
    1235             1240             1245
```

150

```
Arg Ala  Glu Gly Val Arg Thr  Leu Leu Trp Thr Phe  Ile Lys Ser
    1250              1255              1260

Phe Gln  Ala Leu Pro Tyr Val  Ala Leu Leu Ile Val  Met Leu Phe
    1265              1270              1275

Phe Ile  Tyr Ala Val Ile Gly  Met Gln Met Phe Gly  Lys Ile Ala
    1280              1285              1290

Leu Val  Asp Gly Thr Gln Ile  Asn Arg Asn Asn Asn  Phe Gln Thr
    1295              1300              1305

Phe Pro  Gln Ala Val Leu Leu  Leu Phe Arg Cys Ala  Thr Gly Glu
    1310              1315              1320

Ala Trp  Gln Glu Ile Leu Leu  Ala Cys Ser Tyr Gly  Lys Leu Cys
    1325              1330              1335

Asp Pro  Glu Ser Asp Tyr Ala  Pro Gly Glu Glu Tyr  Thr Cys Gly
    1340              1345              1350

Thr Asn  Phe Ala Tyr Tyr Tyr  Phe Ile Ser Phe Tyr  Met Leu Cys
    1355              1360              1365

Ala Phe  Leu Ile Ile Asn Leu  Phe Val Ala Val Ile  Met Asp Asn
    1370              1375              1380

Phe Asp  Tyr Leu Thr Arg Asp  Trp Ser Ile Leu Gly  Pro His His
    1385              1390              1395

Leu Asp  Glu Phe Lys Ala Ile  Trp Ala Glu Tyr Asp  Pro Glu Ala
    1400              1405              1410

Lys Gly  Arg Ile Lys His Leu  Asp Val Val Thr Leu  Leu Arg Arg
    1415              1420              1425

Ile Gln  Pro Pro Leu Gly Phe  Gly Lys Phe Cys Pro  His Arg Val
    1430              1435              1440

Ala Cys  Lys Arg Leu Val Gly  Met Asn Met Pro Leu  Asn Ser Asp
    1445              1450              1455

Gly Thr  Val Thr Phe Asn Ala  Thr Leu Phe Ala Leu  Val Arg Thr
    1460              1465              1470

Ala Leu  Lys Ile Lys Thr Glu  Gly Asn Phe Glu Gln  Ala Asn Glu
    1475              1480              1485

Glu Leu  Arg Ala Ile Ile Lys  Lys Ile Trp Lys Arg  Thr Ser Met
    1490              1495              1500

Lys Leu  Leu Asp Gln Val Ile  Pro Pro Ile Gly Asp  Asp Glu Val
    1505              1510              1515

Thr Val  Gly Lys Phe Tyr Ala  Thr Phe Leu Ile Gln  Glu His Phe
    1520              1525              1530
```

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Arg Lys Phe Met Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg Pro
    1535   1540   1545

Lys Lys Asp Thr Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu
    1550   1555   1560

Glu Glu Ala Ala Pro Glu Ile Arg Arg Thr Ile Ser Gly Asp Leu
    1565   1570   1575

Thr Ala Glu Glu Glu Leu Glu Arg Ala Met Val Glu Ala Ala Met
    1580   1585   1590

Glu Glu Arg Ile Phe Arg Arg Thr Gly Gly Leu Phe Gly Gln Val
    1595   1600   1605

Asp Thr Phe Leu Glu Arg Thr Asn Ser Leu Pro Pro Val Met Ala
    1610   1615   1620

Asn Gln Arg Pro Leu Gln Phe Ala Glu Ile Glu Met Glu Glu Leu
    1625   1630   1635

Glu Ser Pro Val Phe Leu Glu Asp Phe Pro Gln Asp Ala Arg Thr
    1640   1645   1650

Asn Pro Leu Ala Arg Ala Asn Thr Asn Asn Ala Asn Ala Asn Val
    1655   1660   1665

Ala Tyr Gly Asn Ser Asn His Ser Asn Asn Gln Met Phe Ser Ser
    1670   1675   1680

Val His Cys Glu Arg Glu Phe Pro Gly Glu Ala Glu Thr Pro Ala
    1685   1690   1695

Ala Gly Arg Gly Ala Leu Ser His Ser His Arg Ala Leu Gly Pro
    1700   1705   1710

His Ser Lys Pro Cys Ala Gly Lys Leu Asn Gly Gln Leu Val Gln
    1715   1720   1725

Pro Gly Met Pro Ile Asn Gln Ala Pro Pro Ala Pro Cys Gln Gln
    1730   1735   1740

Pro Ser Thr Asp Pro Pro Glu Arg Gly Gln Arg Arg Thr Ser Leu
    1745   1750   1755

Thr Gly Ser Leu Gln Asp Glu Ala Pro Gln Arg Arg Ser Ser Glu
    1760   1765   1770

Gly Ser Thr Pro Arg Arg Pro Ala Pro Ala Thr Ala Leu Leu Ile
    1775   1780   1785

Gln Glu Ala Leu Val Arg Gly Gly Leu Asp Thr Leu Ala Ala Asp
    1790   1795   1800

Ala Gly Phe Val Thr Ala Thr Ser Gln Ala Leu Ala Asp Ala Cys
    1805   1810   1815

152

```
Gln Met  Glu Pro Glu Glu Val  Glu Val Ala Ala Thr  Glu Leu Leu
    1820                1825                1830

Lys Ala  Arg Glu Ser Val Gln  Gly Met Ala Ser Val  Pro Gly Ser
    1835                1840                1845

Leu Ser  Arg Arg Ser Ser Leu  Gly Ser Leu Asp Gln  Val Gln Gly
    1850                1855                1860

Ser Gln  Glu Thr Leu Ile Pro  Pro Arg Pro
    1865                1870
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<222>  (1)..(19)
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Thr Phe Leu Ala Ser Ser Gly Gly Leu Tyr Cys Leu Gly Gly Gly Cys
1                5                10                15

Gly Asn Val
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ccaactgaaa gtgaaaatgt ccctgtccca actgctacac ctggg                       45
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<222>  (1)..(15)
<223>
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Pro Thr Glu Ser Glu Asn Val Pro Val Pro Thr Ala Thr Pro Gly
1                5                10                15
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<213>  Homo sapiens
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Asn Glu Glu Leu Arg Ala Ile Ile Lys Lys Ile Trp Lys Arg Thr Ser
1                5                10                15
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Met Lys Leu Leu
              20

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ggccctcagc gaagcggaca actctgaaga gagca   35

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<212> DNA
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atcctcagtg agatcgacga cccagatgag agtgc   35